Index for Volume 78

AUTHOR AND SUBJECT INDEX. Page numbers of illustrations are in parentheses. Pages indicating errata are in italic type.

Abad, J. A., 1582
Abad, R., 1593
Abawi, G. S., 1566
Abbas, H. K., 1258, 1552
Abbene, S. J., 1587
Abebe, G., 1554
Abies balsamea, discolored root wood of, decay resistance, respirometric testing, 676
Abney, T. S., 1502
Aboshosha, S. S., 629
AbouHaidar, M. G., 1425
Abstracts
—annual meeting, 1513
—Caribbean division, 856
—North Central division, 1501
—Northeastern division, 1506
—Potomac division, 860
—Southern division, 625
Abutilon mosaic virus, ultrastructure, 1584
Achor, D., 1528
Acremonium spp.
—*A. coenophialum*, in tall fescue: detection method, 418; ELISA methods for detection, 1597; root association, ultrastructure, 1611
—*A. typhinum*, on fescue, systemic fungal endophyte, 1510
Acrosternum hilare, on soybean seed, microorganism relation, 306
Adams, G., 1518, 1527
Adams, S. S., 1528, 1597
Adaskaveg, J. E., 1519, 1539, 1598, 1616
Adee, E. A., 1611, 1614
Adelman, M., 1566, 1616
Adimihardja, M., 1515
Adkins, C. R., 1376, 1549
Adlerz, W. C., 625
Aegilops cylindrica, wheat leaf rust of, 1614
Afek, U., 1545, 1567, 1576, 1678
Agaricus bisporus, Verticillium disease of, cultivar reaction, 1617
Agrios, G. N., 1510
Agrobacterium spp.: in grape, seasonal distribution, 627; Ti plasmid pTiC58, transfer gene analysis, 1587
—*A. rhizogenes*: biotypes, attachment in carrot suspension cells, 1322, (1323, 1324); root transformation, nematode and bacteria in tissue-culture system, 1284
—*A. tumefaciens*: on apple, gall formation on crowns of, 857; biotypes, attachment in carrot suspension cells, 1322, (1323, 1324); biovar 3, monoclonal antibody specific to, 1506; biovar 3, population dynamics in rhizospheres of hosts and nonhosts, 945; chemotaxis, to root cap cells, 1528; on grape, systemic reservoir in suckers, 1609; lipopolysaccharide from, strain-specific antibodies induced, 1237; pectolytic activity, 1551; *recA* mutant of, strain C58, 1535; T-DNA, in symptomless grape vines, detection using DNA hybridization, 629
Agrostis palustris, Pythium blight, salinity stress effect, 1495
Aharoni, Y., 1618
Ahlquist, P. G., 1568
Air pollution
—hydrogen fluoride, growth, blight, and fluoride accumulation in kidney beans, 1168
—ozone: loblolly pine response to, three seasons, 1513; seedlings of eight tree species, 1507
—sulfur dioxide: open-air, cereal pathogens, 88; and ozone, soybean cultivar response, 1513
Akem, C. N., 625, 629
Akhtar, M., 1501, 1556
Albersheim, P., 1590
Alcaligenes sp., antifungal activity of, genetic analysis, 1535
Aldwinckle, H. S., 328, 1292, 1524
Alexander, A., 1425
Alexander, J. D., 627
Alfalfa
—anthracnose of, histopathology, 345, (346, 348)
—electrical transmission line effect, 1581
—leaf spot: diseases, fungicidal control, 934; diseases, yield and quality effect, 626; epidemics, analysis of progress, 389; estimation from optimum numbers of sampling units, 1571; pathogens, seasonal incidence in North Carolina, 1580
—*Meloidogyne* and *Fusarium* interaction, 421, *882*
—*Phytophthora* seedling damping-off and root rot, nematode relation, 1514
—Sclerotinia crown and stem rot of, resistance evaluation, 863
—Verticillium wilt: in Maryland, 861; resistance stability under drought, 1510; in Utah, 1514
Alfalfa mosaic virus, antigen detection by immunogold cytochemistry, 1027, (1028, 1030, 1031)
Alfaro, R., 856, 859
Allard, R. W., 1529
Alldredge, J. R., 1389
Allen, E. A., 1554
Alli, I., 1594
Alm, A. A., 1501
Almond
—bud failure, models for, 139
—*Phytophthora* of: lignin formation in bark, quantification, 473; pruning wound cankers from, temperature effect on resistance, 478
—pruning wound cankers, distribution and development in California, 468
—shot hole disease: field moisture generator for study, 1616; moisture and temperature effect, 1539
Alternaria spp.
—*A. alternata*, host-selective toxin, suspension culture tomato cells, 1641
—*A. cassiae*: protoplasts of, nuclear number and pathogenic variability, 1519; on sicklepod, histopathology, 1559
—*A. porri*, conidial release, temperature effect, 1502
—*A. solani*: conidial germination, radiation, temperature, and moisture effect, 926; on tomato, role of chlamydospores in infection, 1572
Alvarez, A. M., 1515, 1550
Amador, J. M., 626, 856, 1579
Amador, R., 856
Amann, A. B., 1579
American Phytopathological Society
—abstracts (see Abstracts)
—annual report, 7
—award listing, cumulative, 51
—award of distinction, 50
—CIBA-Geigy award, 49
—fellows, 42
—Hatch Act observance, 36
—officers, representatives, and committees, 40
—plenary session, phytopathology agenda, 32
—president's address, women in plant pathology, 27
—Ruth Allen award, 48
—symposia: 1986 annual meeting, 363; inoculum thresholds of seedborne pathogens, 867
Ames, R. N., 1567
Ammar, E. D., 1537, 1548
Amouzou-Alladaye, E., 1022
Amrine, J. W., 861
Anagnostakis, S. L., 1534
Anas, O., 1594
Andean potato latent virus, detection by dot immunobinding, 1597
Anders, J. A., 1608
Andersen, G., 1552, 1608
Anderson, A. J., 375, 1589, 1591
Anderson, A. L., 505
Anderson, B. J., 1600
Anderson, J. B., 1047
Anderson, J. J., 1541, 1569
Anderson, M. J., 1520
Anderson, N. A., 1501, 1579
Anderson, R. L., 1534
Andow, D. A., 1545
Andrews, R. E., 1587
Andropogon gerardii, root architecture, VA mycorrhizal effect, 1567
Angwin, P. A., 1555
Ann, P. J., 335
Anthony, B. R., 1618
Antignus, Y., 508
Aphanomyces euteiches, cysts and zoospores, *Pseudomonas* effect, 1594
Appel, D. J., 1593
Appel, D. N., 626, 629, 1559
Appel, J. A., 861
Apple
—blister spot, streptomycin resistance, conjugative plasmid association, 410
—blue mold, biocontrol with pseudomonads, 1697
—crop quality and value, scab infection effect, 1529
—fire blight of, predictive model, maryblyt, 1571
—flyspeck and sooty blotch of, pruning effect, 1004
—*Physalospora obtusa* infection, temperature and wetness requirements, 625
—*Phytophthora* spp. virulent to, sources, 1573
—Phytophthora crown rot, primary inoculum source, 328
—Phytophthora root and crown rot: control using *Trichoderma*, 1511; flood duration effect, 846
—postharvest diseases, biocontrol, 194
—scab of, ontogenic and Vf-resistance, cuticular membrane role, 1066, (1067, 1068)

—spray deposition in trees, row volume concept and canopy density, 1562
Apricot, black spot, differential virulence on stone fruits, 1312
Arabidopsis thaliana
—bacterial pathogens of, race-specific, 1529
—plant virus interaction study, 1586
Arabis mosaic virus, strawberry latent ringspot virus comparison, sequence homology, 1600
Aragaki, M., 1605, 1614
Arauz, L. F., 625, 1573
Araya, C. M., 856
Armillaria spp.
—Alaskan isolates, identification, and pathogenicity, 971
—on hardwood brush, occurrence after herbicides in Maine, 1508
—rhizomorphs in stumps of forests, 1511
Armitage, C. R., 1612
Arora, D. K., 1519
Asclepias spp., bacterial pathogen of, occurrence in Nebraska, 1608
Ash
—anthracnose of, inoculum sources, 1608
—yellows, decline and geographic range, 1554
Asparagus
—Cercospora blight, yield effect, 1530
—Fusarium crown and root rot, fertilizer and chloride salt effect, 1507
—rust development, slow and fast-rusting cultivars, 1546
Aspergillus spp.: aflatoxin biosynthesis inhibited by chlobenthiazone, 1617; in peanut kernels, protein produced by, drought and irrigation effects, 1591
—*A. flavus*: aflatoxin and sclerotial production by, pH effect, 1250, 1617; aflatoxin production in culture, cotton-leaf derived volatiles, effect, 1582; benomyl resistant mutant of, cloned DNA from, 1549; on corn, controlled environment, aflatoxin and fungal interference, 68; on maize kernels, temperature effect, 1376; on peanut, drought stress management for field screening, 659
—*A. nidulans*: pectate lyase gene from, cloning, disease role, 1550; protoplast transformation, electric-pulse procedure, 1615
—*A. parasiticus*, cDNA library from, aflatoxin biosynthesis, 1588
Asselin, A., 1506
Atkinson, M. M., 860, 862, 1528, 1591
Atriplex confertifolia, pythiaceous fungi, rootlet mortality, and dieoff, in Utah, 1607
Aulacorthum solani, soybean virus vector, variation in populations, 1611
Auld, B. A., 1182
Austin, S., 1216
Author's guide for manuscript preparation, 4
Avena sterilis (see also Oats), crown rust race 276 dominance, factors, in Israel, 135
Avocado
—phosphonate levels in seedlings and soil, after treatments, 1562
—Phytophthora root rot of, flood effect, damage threshold, 1544
—rootstocks resistant to *Phytophthora cinnamomi*, 1546
Awuah, R. T., 385
Aycock, R., 885
Ayers, J. E., 149, 790
Aylor, D. E., 1210
Azad, H., 95, 272
Azevedo, M. D., 1611
Azorhizobium caulinodans, nitrogen regulatory gene, role in *Sesbania* nodule symbiosis, 1609
Azzam, O. I., 1568

Bacillus sp., on soybean roots and rhizosphere, colonization and population dynamics, 1523
Backman, P. A., 1615
Bacteria (see also Rhizobacteria)
—aerosolized, recovery model in field, 1581
—coryneform, pathogenic, fatty acid analysis, 1589
—hypersensitivity, tissue desiccation mechanism, 1589
—ice-nucleating, cucumber buds and leaves, survival, 179
—ice nucleation active and non-ice nucleation active, on leaf surfaces, antagonism, 444
—indoleacetic acid production, detection in situ, 1609
—rhizobacterial colonization, on potato, delivery system, 534
—soil, *lac*ZY-marked recombinant, field tests, 1544
Bactericide, copper, bacterial speck of tomato controlled by, with bacteria, 601
Bahme, J. B., 534
Bailey, J. E., 640, 1580
Bailey, S. R., 1047
Baker, C. A., 1537
Baker, C. J., 860, 862, 1528, 1590, 1591
Baker, E. M., 1544, 1566
Baker, F. A., 1554
Baker, R., 190, 1589
Bakker, J., 300, 894, 900
Baldwin, J. G., 1515
Ballance, G. M., 1527
Bambarra groundnut mosaic virus, seed transmission, 860
Bannon, J. S., 1559
Banttari, E. E., 1536
Barbara, D. J., 1560
Barkdoll, A. W., 1549
Barker, K. R., 885
Barley
—disease resistance improvement, male sterile population evaluation, 1546
—disease surveillance program in Morocco, 1545
—double-stranded RNA in, 1512
—dryland root rot pathogens, moisture interaction and disease severity, 1526
—leaf scald and net blotch, comparative epidemiology, 1538
—powdery mildew: autofluorescence, silicon, and hypersensitivity, 1557; and drought effect combined, 1611
—*Pyrenophora teres* on, yield affected by, 295
—resistance induced and yield response, 1592
—resistance sources in land races, 905
—scald of, yield loss quantification using several methods, 1530
—Septoria nodorum blotch of, resistance sources, 1611
—stripe, seed treatment, 1562
—wild, leaf rust resistance, identification, 1547
Barley stripe mosaic virus
—binding to wheat streak mosaic virus cylindrical inclusions, 589, (591, 593)
—cereal protoplast resistant screening, 1568
—chlorophyll, chloroplast ribosomal RNA, and DNA reduced by, 570
—transcripts from cDNA clones, biological activity, 1601
Barley yellow dwarf virus
—antimonoclonal antibody of, anti-idiotypic antibodies, 1302
—aphid-transmitted isolates, characterization, 1586
—cDNA probes, 1560
—cereals screened in Morocco, 1566
—cross-protection, 1587
—*Elymus* as resistance source, 1584
—MAV-like isolates of, serological and vector relations, Australia and USA, 766
—monoclonal antibodies against, circulative transmission in vectors, 1538
—phenotypic mixing, dependent transmission mechanism, 1326
—Russian wheat aphid vector, transmission failure, 1507
—strains in Morocco, 1548
—transcapsidation in mixed infections, 1560
—transmission, barley and oats as aphid virus reservoir, 811
—variants from one isolate, 1587
—on winter wheat, nature of resistance, 1583
Barnes, J. M., 36
Barnes, L. W., 626
Barnett, O. W., 627
Barrera, C., 1597
Barry, G., 1544
Barta, T. M., 1569
Bartnicki, S., 1576
Bartz, J. A., 1553
Basile, S. R., 1553
Bassett, M. J., 607
Bates, J. J., 861
Battershell, R., 1593
Bauchan, G. R., 1590
Baudoin, A. B., 1593
Baxter, L. W., Jr., 1015
Bays, D. C., 860
Beachy, R. N., 1528, 1561
Beagle-Ristaino, J., 1582
Bean, G. A., 862, 1617
Bean, *Thanatephorus cucumeris*, herbicide, and cultivar effects, 859
Bean calico mosaic virus, geminivirus, new, 1579
Bean common mosaic virus
—monoclonal antibodies to, characterization, 1585
—RNA translation, organization, 1518
Bean dwarf mosaic virus, isolation and characterization, 858
Bean golden mosaic virus
—cytopathology and properties in Brazil, 1567
—molecular characterization, 1568
—polymerase gene, expression in bacteria, 1599
—viral transcript to genome, mapping, 1599
Bean pod mottle virus
—on soybean, epidemiology in Kentucky, 1547
—in specific infectivity, decline cause, 1537
Bean yellow mosaic virus
—coat protein gene, DNA cloning and sequencing, 1518
—nuclear inclusions induced by, purification and immunological analysis, 1266, (1268, 1269, 1273)
Beaver, J. S., 856, 857
Beaver, R. W., 1618
Beck von Bodman, S., 1587
Becker, C. M., 1571, 1573
Becker, J. O., 778, 1466
Beer, S. V., 1292
Beier, R. C., 1075
Bélair, G., 604
Belanger, R. P., 1516, 1555
Bell, D. K., 629
Belser, W., 1535
Bender, C. L., 625, 1527, 1587
Benedict, A. A., 1550
Benenfeld, B. J., 1560

Benhamou, N., 1506
Benítez de Rivas, R., 857
Benner, H. I., 1537
Bennett, A. R., 860
Bennett, J. M., 1604
Bennett, J. W., 1617
Benson, D. M., 595, 1569
Ber, R., 508
Bergdahl, D. R., 1510, 1511, 1533
Bergdahl, J. A., 1506, 1605
Berger, P. H., 1517, 1531, 1537
Berger, R. D., 1615
Berggren, G. T., 630, 1525, 1538, 1594, 1614, 1615
Bergstrom, G. C., 1503, 1526, 1588
Berkett, L. P., 1506, 1605
Bermúdez, W., 857
Bernard, S. C., 1524
Bernardo, M. A., 1227
Berndt, W. L., 1504, 1569
Bernier, C. C., 1527, 1595
Bertrand, S., 1506
Besal, E. A., 1136
Bess, V. H., 1610
Bettiga, L., 1531
Beute, M. K., 493, 1082, 1596
Bharathan, N., 310, 1589
Bhatnagar, D., 1588, 1617
Bidne, K. G., 1579
Bielenin, A., 1402
Biggs, A. R., 1070, 1109, 1352, 1572
Bilderback, T. E., 1569
Biles, C. L., 625, 656, 1523, 1544
Biological control
—antagonistic for apple postharvest diseases, 194
—black rot of cabbage using *Xanthomonas*, 1558
—*Colletotrichum* spp. for legumes, specificity, 986, (989)
—control agent integration, pH and solid matrix priming, improved performance, 520, (523)
—*Enterobacter cloacae* for Pythium damping-off, ammonium production, 1075
—Fusarium wilt of cucumber, bacteria and nonpathogenic fusaria, 190
—*Myrothecium* spp. for *Penicillium digitatum* on lemon, 1593
—necrotic ring spot of bluegrass, 1504
—nematodes, fungus benomyl resistance, induction, 1523
—*Penicillium frequentans* for *Monilinia laxa*, 888
—pseudomonads in wheat roots, bacterial surface properties, 1522
—*Pseudomonas cepacia*, for molds on apple and pear, 1697
—*Pseudomonas fluorescens* for *Pythium ultimum*, fluorescent siderophores, 166
—*Pseudomonas putida* for *Pythium ultimum*, on canola and tomato, 1521
—*Pseudomonas solanacearum* for Fusarium wilt of tomato, 1307
—rhizobacteria for root-knot nematodes, 1466
—Rhizoctonia crown and root rot control by sugar beet root fungi, 1522
—Rhizoctonia root rot of sugar beet, mechanisms, 1502
—*Serratia marcescens* for *Sclerotium rolfsii*, chitinase role, 84
—take-all on wheat by fluorescent pseudomonads, 1094
—*Talaromyces flavus* to *Verticillium dahliae*, glucose oxidase role, 488
Bipolaris spp.
—*B. maydis*: on corn, race C, pathological and physiological identification, 550; race T, sporulation and peroxidase activity, 1501
—*B. setariae*: genetic diversity of races, 1574; on pearl millet, genetics of resistance, 1179
Birch, mycorrhizal and nonmycorrhizal response to ozone, 1508
Bird, A. E., 860
Bird, J., 857
Bishop, A. L., 945, 1506, 1551
Bistline, F. W., 625, 1602
Bitterlin, M. W., 278
Bjarko, M. E., 451, 457, 1546
Black, L. L., 1578
Black walnut, anthracnose, companion planting with autumn olive, 1606
Blake, J. H., 1520
Blanchette, R. A., 1532, 1533
Bledsoe, A. M., 1539
Blenis, P. V., 1554
Bloomberg, W. J., 403
Blueberry
—scorch, carlavirus association, 1636, (1638)
—stem blight of, detached stem assay for evaluation, 629
Bluestem, foliar disease, 1582
Blum, L. K., 1544
Blunt, D. L., 1574
Bockus, W. W., 1590
Boerma, H. R., 1546
Boethel, D. J., 306
Bogdanoff, C. P., 1139
Boiteux, L. S., 1463
Boivin, G., 604
Boland, G. J., 1241
Bonde, M. R., 861, 1276, 1396, 1491, 1530
Bonsall, R. F., 1522
Boote, K. J., 1615
Boothroyd, C. W., 1387
Borromeo, E. S., 1227
Borth, W. B., 1586
Bosch, U., 1552
Bosque-Perez, N. A., 1538
Bostock, R. M., 468, 473, 478, 1516, 1590, 1591, 1609
Botha, A. T., 1581
Botryosphaeria spp., on peach, presymptom histopathology, 1109, (1111-1116)
—*B. dothidea*: on peach, water stress effect, 1605; on willow, fungicides for, 627
—*B. obtusa*, in peach buds, 626
Botrytis spp.
—*B. cinerea*: on apple, cell wall calcium effect, 1582; on apple and pear, biocontrol, 1697, (1699); benomyl resistance, new benzimidazole fungicide efficacy, 613; fungicide resistance, management, 1562; on geranium, conidial concentration in greenhouse, 1520; on geranium, fungicide-resistant populations, technique for cycling, 1531; on geranium, resistance variation, 1508; on grapes, aerial mycelium and conidia of, factors affecting, 260; on grapes, postharvest control using iodine, 1553; on grapes, postharvest control with sulfur dioxide, 1617; nuclear behavior, germinating conidia, 1627, (1628, 1629); *Pseudomonas* inhibitory to, prevention by sterol, 1509; spore germination rate, growth, medium supplement effect, 1582
—*B. squamosa*, on onion: precipitation and infection potential, 1078; spore episode forecasting, in New York, 966
Boucher, A., 663, 1331
Bouhida, M., 1548, 1559
Bourgeois, G., 1615
Bouwman-Smits, L., 300, 894, 900
Bouzar, H., 1237
Bowden, R. L., 1563
Bowers, J. H., 1538, 1598
Boyce, D., 1554
Boyer, C. D., 1052, 1582
Bozarth, R. F., 1585
Bracken, T. D., 1581
Bradfute, O. E., 1585
Bradshaw-Rouse, J. J., 996
Brakke, M. K., 570
Branch, A. D., 1560
Brandt, E., 1544
Bratrachedra sp., on pineapple, pH relation, 1542
Braun, E. J., 1503, 1515, 1565
Brecht, J. K., 1553
Brenneman, T. B., 1561
Bretschneider, K. E., 1590
Brewster, V. A., 1603
Bric, J. M., 1609
Bridgman, H. B., 1548
Briskin, D. P., 1000, 1502, 1503
Bristow, P. R., 1636
Britton, K. O., 626, 1109, 1572
Brlansky, R. H., 1298, 1524, 1528, 1572
Brodny, U., 135
Brooker, N. L., 1519
Brooks, D. S., 626, 1559
Broome, J. C., 1516
Brophy, L. S., 1087
Broscious, S. C., 934
Brown, D. A., 1526, 1580
Brown, G. E., 1553
Brown, J. K., 1579
Brown, M. C., 861
Brown, P. R., 1145, 1544
Brown, P. W., 1614
Brown, W. M., Jr., 1539, 1564, 1574
Browne, G. T., 846, 1573
Brubaker, R. R., 746
Bruck, R. I., 1580
Bruckart, W. L., 1593
Bruening, G., 1124, 1558
Bruton, B. D., 1545, 1579
Bubrick, P., 783, 1599
Bucheli, P., 1590
Buchenau, G. W., 1546, 1561, 1596
Buchman, A. M., 860
Buddenhagen, I. W., 1538, 1563
Buell, R., 1525
Bugbee, W. M., 205, 1590
Buhler, R. D., 1514
Bunkers, G., 1528, 1591
Burgess, L. W., 185
Burleigh, J. R., 295, 1545
Burmeister, H. R., 1591
Burnes, P. M., 107, 1258, 1545
Burns, B. S., 1554
Burr, T. J., 410, 945, 1506, 1551, 1573
Burris, J. S., 1515
Bursaphelenchus xylophilus and *mucronatus*, crossing of isolates, 1507
Bushnell, W. R., 1557, 1591
Buss, G. R., 1585
Bustamante, E., 857

Caceres, J., 208
Caesar, A. J., 1523
Cai, S. H., 1585
Calderón, M., 858
Caldwell, R. W., 68
Callistemon, growth promotion from avirulent fungus, characterization, 1527
Calvert, L. A., 1221, 1561
Campbell, C. L., 217, 389, 595, 626, 1571, 1580
Campbell, R. N., 1578
Candresse, T., 1280
Cantone, F. A., 1501
Cappellini, R. A., 1509, 1557
Capsicum annuum (see also Pepper)
—bacterial leaf spot of, quantitative resistance, 607
—virus resistance, genetic, 1547

Cárdenas, E., 628
Cardwell, K. F., 1571
Carley, H. E., 1561
Carroll, C. M., 1526
Carroll, K. L., 1551
Carroll, N. B., 1565, 1582
Carroll, R. B., 862, 864, 1579
Carroll, T. W., 1586
Carrot
—Pythium diseases, in California, 1578
—root-knot nematode of, spatial pattern and sequential sampling, 604
—southern blight, epidemic factors, 595
—suspension cells of, biotypes of *Agrobacterium* studied, attachment differences, 1322
Carson, M. L., 1566, 1579, 1603
Carta, L. K., 1515
Cartwright, R. D., 986, 1612
Casale, W. L., 1673
Cashion, N. L., 75
Cassells, J., 1595
Cassman, K. C., 1516
Castello, J. D., 1555
Castle, S. J., 1548
Castro, C., 1287
Cauliflower, black rot pathogen, transmission and control, 1515
Cauliflower mosaic virus
—anti-, hybridoma formation, B-cells, 1631
—genetic analysis of gene VI, 1600
—in transgenic plants, genes I and VI effect, 1517
Caulimovirus, promoters in protoplasts, comparative analysis, 1517
Cavileer, T. D., 1506
Celery, linear furanocoumarins, induction, 1556
Ceratocystis spp.
—*C. fimbriata*, on sycamore, toxin host specificity resistance indicator, 1534
—*C. paradoxa*, on sugarcane, varietal reaction, 1574
—*C. ulmi*, on elm callus, host-pathogen interaction, 1618
Cercospora spp., protoplasts regenerated from, cercosporin response, 414
—*C. arachidicola*: bacteria antagonistic to, bioassay method, 864; phytotoxic substances produced by, 1082
—*C. kikuchii*: cercosporin recovered from, fungistatic, 1592; on soybean, isolate effect on seed quality, 1504
—*C. zeae-maydis*, on corn, resistance inheritance, 790
Cercosporidium personatum, on peanut
—resistance, temperature and humidity effect, 493
—virulence at three temperatures, 1596
Cereals, fungal pathogens, open-air fumigation and sulfur dioxide, 88
Cerrena unicolor, on *Acer* and *Betula*, canker formation stages, 1533
Cervantes, L. A., 1553
Chalutz, E., 1592
Chamaecyparis nootkatensis, forest decline, abiotic origin, in Alaska, 1606
Chamot, J., 1565
Champaco, E. R., 626, 1605
Chang, A.-C., 1266
Chang, C. J., 1602
Chang, Y., 1585
Chapman, M. A., 1529
Chase, T. E., 1534, 1554
Chastagner, G. A., 1532, 1613
Cháves, M., 856
Cháves, O., 856
Chellemi, D. O., 221, 1531, 1572, 1573
Chen, J., 1602
Chen, J.-P., 550
Chen, M. H., 1027, 1536
Chen, M. M., 1538, 1603
Chen, P., 1585
Chen, T. A., 828, 1537, 1609
Chen, W., 314, 1447, 1520, 1522
Chen, X., 1542
Cherry, sweet
—brown rot of, temperature and wetness effect, 1352
—Prunus necrotic ringspot and prune dwarf viruses effect on pollen viability, 1547
Cherry leafroll virus
—strains, walnut pathogenicity and serology, 817
—tobacco ringspot virus-RNA effect on, 1558
—walnut isolate, differential infection, 1547
Chestnut, blight resistance, screening for, 1533
Chet, I., 84
Chevone, B., 1513
Chiang, C. C., 1525, 1610
Chiba, M., 613
Chickpea
—Fusarium wilt, in California, 1563
—virus diseases in California, 1538
Chile, fungal and bacterial diseases of, cultivar resistance, in Costa Rica, 857
Chinese cabbage, anti-cauliflower mosaic virus hybridoma formation, B-cells, 1631
Cho, J. J., 1348, 1548
Choanephora cucurbitarum, on *Phaseolus vulgaris*, new disease, 857
Cholick, F. A., 1546, 1561
Christ, B. J., 860, 863, 957, 1506
Christensen, C. M., 1618
Christian, D., 1525
Christie, S. R., 1525
Chun, W., 1536
Chung, Y. R., 836
Churchill, A. C. L., 1549
Ciborowski, J., 1594
Circulifer tenellus, by virescence agent
—flowering induction, 285, (287)
—host range, 1602
Citobion avenae, barley yellow dwarf virus vector, MAV-like isolates, 766
Citrus
—Asiatic canker of, spatial and temporal spread in Argentina, 739
—blight: graft transmission, 1572; reduced incidence by leafhopper control, 625
—canker and bacterial leaf spot comparison, cytology, 1528
—fatal yellows of, anatomy, relation to sunken-vein disease agent, 687, (688-690, 692, 693)
—leaf spot of, epidemiology in Mexico, 440
—phytoalexin production in: fosetyl-Al and phosphorus acid effect, 1545; scoparone, resistance association, 1678
—Phytophthora gummosis of, biocontrol with *Aspergillus* and *Penicillium*, 1557
—*Phytophthora parasitica* in orchards of, population estimations, 940
—Phytophthora root rot, screening for resistance, from chlamydospore- infested soil, 1577
—ringspot, virus association, components, and characterization, 1298, (1300)
—root rot of: *Fusarium solani* and *Phytophthora* spp., 1576; *Phytophthora* distribution, in California, 1576
Citrus tristeza virus
—coat protein characterization, 1221
—incidence in Colombia, 858
—mild and severe strains, inclusion body number, 1524
—monoclonal antibody discriminating isolates, 1559
—survey in Honduras, 856
Ciuffetti, L. M., 1501
Civerolo, E. L., 1528
Cladosporium spp.
—*C. caryigenum*, on pecan leaves, development of, 1104, (1105-1107)
—*C. variabile*, on spinach: biology, 1577; fungicides for management, 1577
Clapper, D. L., 1536
Clark, C. A., 1442
Clark, J. M., Jr., 1599
Clarke, B. B., 1521
Clarke, G. G., 1508, 1562
Clavibacter spp.
—*C. michiganense*: plasmid analysis, 1565; plasmid of, PCSl distribution and characterization, 1381; on sweet corn, hybrid reaction and yield loss, 172; on tomato, accession reactions, 1565; on tomato, secondary spread, 1570; on tomato foliage and fruit, survival and distribution, 1565; tomato latent infection, detection, 1551; on tomato seed, semiselective agar medium for, 121
—*C. xyli*: on bermudagrass, distribution in France and USA, 1540; on corn, seed transmission, 1540; on corn, yield effects, 1540; culture media for, 1541; delta-endotoxin gene from *Bacillus thuringiensis*, field release, 1540; endophytic, seed transmission potential, 1608; experimental host range, 1540; persistence in soil, water, and debris, 1541; phenotypic and genotypic diversity, 1569; population dynamics, recombinant in corn, 1540; recombinant of, mechanical transmission, 1541; recovery from leafhoppers, in California, 1541; on sugarcane, diagnosis with auto-fluorescence, 233, (234); on sugarcane, population variability in resistant cultivars, 462; on sugarcane, vascular tissue colonization of cultivars, 722
Claviceps purpurea, on barley, propiconazole for, 1509
Clayton, M. K., 1570
Clem, R. J., 1586
Clerjeau, M., 1022
Cleveland, T. E., 1588
Cloud, G. L., 1563
Clover
—*Sclerotinia trifoliorum* on, foliar clipping effect, 1580
—subterranean luteoviruses found in Mississippi, 1584
Clover yellow vein virus, nuclear inclusions induced by, purification and immunological analysis, 1266, (1268, 1269, 1273)
Coakley, S. M., 543
Cobb, F. W., Jr., 1534, 1554, 1555, 1603
Cochliobolus spp.
—*C. heterostrophus*, fitness of, foreign DNA effect, 1588
—*C. sativus*: conidia of, effect of loss of carbon, 1597; conidial germination, atrazine effect, factors, 1503; conidial viability, atrazine in soil effect, 1598; in soil, effect on fescue stand, growth, and root mass, 1580; on wheat leaves, sporulation affected by *Trichoderma*, 656; on wheat roots, infection from single conidia, 1574
Cody, Y. S., 1451
Coffee, diseases, importance and etiology, in Guatemala, 857
Coffey, M. D., 974, 1150, 1519, 1546, 1558, 1563, 1593, 1617
Cohen, J., 809
Cohen, S., 508

Cohen, Y., 144, 636, 912, 915
Colbaugh, P. F., 626, 1532
Colbert, S. F., 1466
Coleman, R. H., 1569
Collembola, mycophagous, effect of *Trichoderma* and *Gliocladium* on, 628
Colletotrichum spp.: on alfalfa, fungicide evaluation for, 934; on leguminosae, host specificity, 986; on pepper, tomato, strawberry, and apple, 1578; spore matrix, nuclease activity, 1588
—*C. acutatum*, survival, soil temperature and moisture effect, 1573
—*C. capsici*, weeds as alternate hosts, 1615
—*C. coccodes*, conidial germination and sclerotial growth, factors, 1357
—*C. gloeosporioides*: on avocado, polygalacturonase production, purification, 1557; on *Stylosanthes capitata*, variability in Brazil, 131
—*C. graminicola*: on corn, spread from residues in rotation plots, 756; mutant of, characterization, 1502; mutants, melanin-deficient, analyses, 1504
—*C. lindemuthianum*: on bean, races in Brazilian isolates, resistance detection, 650; mRNA accumulation, elicitor response, 1589
—*C. orbiculare*, on *Xanthium spinosum*, environmental factors, 1182
—*C. trifolii*, on alfalfa: histopathology, 345, (346, 348); phytoalexin production, 1590
Collins, D. J., 1577
Collins, M. H., 418
Collmer, A., 1569
Commelina yellow mottle virus, non-enveloped bacilliform virus with dsDNA, 1548
Computer application, rice blast disease forecasting system, 931
Conn, K. E., 1573
Conservation tillage (see Tillage)
Container media
—conifer seedlings, *Fusarium* diseases, factors, 1533
—microbial activity and biomass in, suppressive to Pythium damping-off, 1522
—*Phytophthora* detection in, serological and culture plate methods, 1569
—Pythium damping-off in, microbial activity, 314
—*Pythium ultimum* in, activity and biomass prediction, 1447
—*Rhizoctonia solani* in hardwood bark media, organic matter and cellulose amendment effect, 836, *1512*
Continente, P., 1592
Converse, R. H., 1631
Conway, K. E., 625, 627, 1530
Conway, W. S., 1052, 1582
Cook, D., 1501
Cook, K. L., 1611
Cook, R. J., 778, 1094
Cooksey, D. A., 601, 1569
Coombs, D. H., 1331
Copeman, R. J., 1558
Corbett, M. K., 860
Corgan, J. N., 1530
Corn (see also Maize)
—acid rain and drought stress interaction, 1513
—aflatoxin contamination and fungal interference, controlled environment, 68
—anthracnose of, spread from residues in rotation plots, 756
—anthracnose stalk rot of, wound predisposition and genotype effect, 1509
—*Aspergillus flavus*: on kernels of, temperature effect, 1376; overwintering on cobs, 378
—*Aspergillus* spp. in ears of, kernel infection in Mississippi, 1515
—benomyl and mancozeb effect on growth, 864
—*Bipolaris maydis*: on, 378; race C of, identification, 550, (552, 553)
—cycloheximide decrease in, lectin role, 1556
—Diplodia stalk rot of, irrigation effect in five hybrids, 1579
—drought resistance, mycorrhizal improvement, 1604
—dry matter loss from storage fungi, 1618
—ear and stalk inoculation methods, comparison, 1612
—ear infection with *Fusarium* spp., toxigenicity of species, 1258
—*Exserohilum turcicum* pathosystem, chromosome arms of, resistance components, 1603
—*Fusarium graminearum* on roots, tillage and rootworm effect, 1545
—Fusarium seedling blight, inoculum size and density relation, 1539
—Fusarium stalk rot of, image analysis and visual assessment methods, 1525
—gray leaf spot of, resistance inheritance, 790
—growth, yield, and lodging of, chlorpyrifos effect, 1561
—head smut: diallel analysis of resistance, 65; first report in Colorado, 1564
—*Helminthosporium carbonum* on, resistant to races 1 and 2, 1501
—high moisture grain, anhydrous ammonia as microbial inhibitor, 1553
—hybrid evaluation for resistance to wilt and leaf blight, 1566
—northern leaf blight, lesion expansion, genetic analysis, 149
—seed and fungal respiration, 1553
—southern rust of, epidemics in Pennsylvania and Maryland, 579
—stalk rot and stalk borer, planting date and genotype effect, 862
—stalk rot and strength of, plant density and kernel sink level effects, 1525
—Stewart's wilt, endosperm color effects, 909
—sweet: bacterial wilts of, severity and yield relations, 1581; hybrid disease reactions, yield reductions, 172; rust incidence and severity, relation on susceptible and resistant hybrid, 1155; rust of, fungicide for, 1504; rust resistance and spatial and temporal development, 227
—trichothecenes in tissue, inhibition by H-leucine, 1673
—yield, detasseling, and *Cochliobolus carbonum* relations, 1529
—yield loss from *Rhizoctonia solani* AG-2 type 2 and nematodes, 1577
Correll, J. C., 512, 1017, 1520, 1575
Correll, M., 1558
Corynebacterium spp.
—*C. michiganense*, wheat germplasm screened for, 1566
—*C. sepedonicum*: on potato, monoclonal immunofluorescence for determination, 1604; on sugar beet seed, recovery, 205, (206)
Côté, F., 1506
Cotton
—black root rot of, incidence and severity relations, 1529, 1662, (1664-1666)
—Fusarium wilt, inoculum type, and source effect, 628
—mycorrhizae in fumigated soil, growth response, 1567
—root colonization by soilborne fungi, 716
—southwestern rust on, weather factors, 1614
—*Verticillium dahliae* and *V. tricorpus* on roots of, seasonal colonization, 708
—Verticillium wilt: cover crop, potassium, and variety effect, 1516; detection using immunoenzymatic staining, 1174, (1177)
Cottonseed, deterioration of, methanol stress method, 1531
Cottonwood
—bud proliferation, etiology in Alaska, 1554
—ethylene production in sapwood of, compartmentalization and closure of wounds, 1261, (1262)
Cotty, P. J., 1250, 1617
Courtney, M. L., 1531, 1616
Couture, L., 1510
Cowpea, *Fusarium oxysporum* and *Meloidogyne javanica* interaction, nature of, 1575
Cowpea mosaic virus, resistance genes in cowpea, 1124
Cox, R. L., 1597
Craig, J., 1553, 1648
Cranberry, decline syndrome, *Phytophthora* association, in Wisconsin, 1572
Crawford, R. H., 1592
Creamer, R., 1560
Crebs, D. L., 1514
Criconemella xenoplax
—egg hatch at different temperatures, 630
—*Hirsutella rhossiliensis* parasitic to, 1559
Cronartium quercuum
—aeciospore source, rust prediction, 1534
—on loblolly pine, symptomatic survivors in field performance, 1607
—on pine, histopathology of infection, 396, (397, 399-401)
—protoplasts from, 1607
Cross, D., 1595
Crosslin, J. M., 1605
Crowe, F. J., 1574, 1575, 1581
Crucifers
—black rot, inoculation technique, 981, (983, 984)
—residues and *Fusarium*, solar heating, and soil amendment effect, 289
Crum, C. E., 1517
Cryphonectria (see also *Endothia*)
—*C. parasitica*: on chestnuts, hypovirulence association in Connecticut, 1534; dsRNA of, detection and localization using hybridization, 1549; dsRNA of, protein bound to, 1599; fungal genes of, characterization, 1549; transformation using fungal promoters, 1549
Cu, R. M., 861
Cubeta, M. A., 1558
Cucumber
—bacteria on buds and leaves of, survival and humidity relations, 179, (181)
—cotyledon stress, pathogenesis-related proteins, 1506
—Fusarium wilt of, biocontrol with bacteria and nonpathogenic fungi, 190
—Rhizoctonia belly rot, screening technique, 1578
—*Rhizoctonia solani* of, protection by *Rhizoctonia*-like fungus, 1558
—root knot nematodes and virus of, hybridization and protoplast fusion methods, 1578
Cucumber mosaic virus, strain WL, cloning and transcription, 1517
Cucumber necrosis virus, nucleotide sequence and gene expression, 1618
Cucurbit
—geminiviruses, interactions in field, 1536
—potyviruses of, single and mixed infections, 1548

—viruses in Mexico, detection, 626
Cugusi, M., 1280
Cuiffetti, L. M., 1549
Cullen, R. E., 1525
Culver, J. N., 1600
Cunfer, B. M., 1530, 1611
Curl, E. A., 628, 1522
Cyclamen spp., soft rot and wilt of, by *Erwinia carotovora*, 1564
Cyclaneusma minus, bravo spray schedule, 1512
Cylindrocladium spathiphylli, on *Heliconia*, root rot, 1614
Cytospora cincta, *Pseudomonas syringae* competing with, pH involvement, 619
Czosnek, H., 508

Dabney, S. M., 629
da Graca, J. V., 1298
Dahmen, H., 1033
Dale, J. L., 118
Dally, E. L., 1541
Dam, R., 1610
Damann, K. E., Jr., 233
Damicone, J. P., 1614
Damsteegt, V. D., 1507, 1548, 1584, 1611
Dandurand, L. M., 1576
Daniel, G., 1508
Daniels, C., 1451, 1525
Daniels Hetrick, B. A., 1567
D'Arcy, C. J., 811, 1537
Darvill, A., 1590
Dasheen mosaic virus, on *Xanthosoma*, in Puerto Rico and Dominican Republic, 857
Datnoff, L. E., 771, 861
Daub, M. E., 414, 1082, 1546
Davies Correll, M., 1522
Davis, C. L., 1524, 1528
Davis, D. D., 1507, 1509
Davis, J. C., 1595
Davis, J. R., 1287
Davis, M. J., 462, 722, 1597, 1603
Davis, R. E., 1541, 1555, 1588, 1602
Davis, R. M., 856, 1578
Dawson, W. O., 783, 1599, 1600
Deahl, K. L., 1530
Dean, J. L., 462
Dean, R. A., 1550
De Boer, S. H., 1604
De Cal, A., 888
DeFeyter, R., 1588
Dela Cruz, A., 1564
Delgadillo, F., 626
De Long, R. E., 1520
Delphinium consolida, foliage rot, *Erwinia* cause, 1612
DeLuca, T. H., 1576
DeMars, C. J., Jr., 1533
Demler, S. A., 1560
DeMott, P. J., 1570
Dempsey, D. B., 862
Demski, J. W., 631
Denny, R., 1524
Denny, T. P., 1186, 1543
Deom, C. M., 1528
Derks, A. F. L. M., 1337
Dernoeden, P. H., 1521
Derrick, K. S., 1298, 1572
Desjardins, P. R., 1599
de Souza, V. V. B., 1584
de Souza-Dias, J. A. C., 1548
Dessens, H., 1601
DeVay, J. E., 1556
De Vries, O. M., 1607
De Vries, R. M., 1565
Dewitt, N. D., 1602
de Zoeten, G. A., 345, 1560
Diagnosis
—potato and tomato disorders, French expert systems, 1597
—tomato ringspot virus, serological grouping of isolates, 278, (284)
Dianese, J. C., 650
Diaporthe phaseolorum, on soybean
—canker prediction from southern strains, 1615
—cultivar and environment effects, 1614
—cultivar, tillage, and cropping system effects, 266
—structure, growth, and pathogenicity variations, 629
—symptomless plants, 1502
Dick, W. A., 836
Dickey, R. S., 996
Dickman, M. D., 1550
Diehl, S. V., 626
Dietert, R. R., 1326
Dillard, H. R., 1357
Diplodia gossypina, on sweet potato, inoculum source and infection court, 1442
Disease
—focus expansion: constant rate, 54; parameter-sparse models, 59
—spatial pattern of plant pathogens, analysis using geostatistics, 221
Disease forecasting
—Botrytis leaf blight of onion, spore episodes in New York, 966
—peanut leaf spot advisory, genotypes with partial resistance, 640
—rice blast disease, computerized, field tests, 931
Dixon, E. W., 1567
Djurle, A. M., 1539
DNA hybridization
—*Heterodera* species and races distinguished, close relations, 1136
—pathovars of *Pseudomonas syringae* differentiated, with probe, 1186
Doares, S. H., 1590
Dodds, J. A., 1536, 1548, 1585
Dodonaea eriocarpa, yellows disease, closterovirus association, 1586
Dolan, T. E., 974
Domier, L., 1518
Domir, S., 1610, 1618
Dorhout, R., 1421
Dostaler, D., 1507, 1508, 1509, 1510
Doster, M. A., 468, 473, 478, 1532, 1539
Doudrick, R. L., 1501
Douds, D. D., 1604
Douglas, S. M., 1541, 1555
Douglas-fir
—*Fusarium oxysporum* on roots, phenolic infusion by *Laccaria bicolor*, 1524
—laminated root rot, modeling control strategies, 403
—rust of, inoculum and infection factors, 1613
Dow, R. L., 672
Drahos, D., 1544
Drechslera gigantea, on grasses, petasol produced in plants, 1591
Drepper, W. J., 1612
Drozdowski, J. L., 1507
Duffus, J. E., 1340, 1538, 1561, 1583, 1584
Dukes, P. D., 1581
Dumroese, R. K., 1533, 1607
Dunbar, K. B., 1565
Duncan, N. S., 1501
Duncan, R. R., 1571
Dunez, J., 1022, 1280
Duniway, J. M., 1550, 1701
Dunkle, L. D., 1501
Dunn, M. F., 1589
Dunsmuir, P., 1556
du Plessis, H. J., 1312
Durand, D. P., 1118, 1587
Durbahn, C., 1550
Duthie, J. A., 626, 1571
Dutky, E. M., 861
Dutt, G. R., 1521
Duval, D., 1470
Dwinell, L. D., 1555, 1607
Dyer, A. T., 1554

Eastburn, D. M., 1573
Easton, G. D., 1577
Eaton, G. W., 1558
Eayre, C. G.,, 1524
Echandi, E., 1524, 1558, 1565, 1582
Echavez, R., 856
Echavez-Badel, R., 857
Echt, C., 1543
Eckert, J. W., 1514
Edwards, M. C., 1568, 1584
Egan, A. R., 1561
Egel, D. S., 1551
Eggplant, tymovirus from, properties and cytopathology, 1584
Ehlenfeldt, M. K., 1216
Elabidine, F. Z., 1611
Elad, Y., 84
El Ghaouth Magary, A. O., 1509
Elias, K. S., 1543
Ellingboe, A. H., 426
Elliott, V. J., 512, 645
Ellis, M. A., 246, 794, 822, 1316, 1571
Ellis, P. J., 1583
Elm, Dutch elm disease, host-parasite relations of elm calli, 1610
Elmer, W. H., 1507, 1518
El-Nashaar, H. M., 626
Elson, J. E., 1532
El-Yamani, M., 1548, 1566
El-Zik, K. M., 1530, 1531
Endert-Kirkpatrick, E., 619
Endocronartium spp., on pine, nomenclature, nuclear cycle, and taxonomy, 1534
—*E. harknessii*, in pine, resistance, histology, 1554
Endophytes
—*Acremonium coenophialum* on tall fescue, detection method, 418
—in turf and forage grasses, detection method, 237, (238, 239)
Endothia (see also *Cryphonectria*)
—*E. parasitica*: dsRNA genome, loss and reappearance, 1550; dsRNA strains, calcium oxalate production by, 860; dsRNA strains, chestnut age effect, 863; hypovirulence, dsRNA association, molecular characterization, 1550; hypovirulent isolates, ds-RNA sequence homology, 751; vegetative compatibility comparison, Michigan and West Virginia, 863; virulent and hypovirulent, bark effect on ethylene production, 841
Enebak, S. A., 1532, 1533
Engel, R., 1526
English, J. T., 260, 1478, 1484, 1539, 1550
Enterobacter cloacae
—ammonium production by, biocontrol role of Pythium damping-off, 1075
—biocontrol agent for cucumber or tomato, performance improvement, 520
Epidemics, analysis, spatio-temporal autocorrelation, 240, (246)
Epidemiology
—data analysis, path coefficient, 1538
—focus expansion, wheat rust, and spinach mildew, 919
—in orchards, duration of leaf wetting and drying periods, 1571
Epps, W. M., 633
Epstein, L., 1523
Errata
—vol. 77, 1987: no. 8, 882; no. 10 and 12, 378; no. 11, 504; no. 10, 126

—vol. 78, 1988: no. 2 and 6, 1260; no. 4, 882; no. 6, 8, and 9, 1512
Erwin, D. C., 1527, 1616
Erwinia spp.: on potato tubers of somatic hybrids, resistance source, 1216, (1217); species identification, serological probes, monoclonal antibody use, 1430
—*E. amylovora*: on apple and pear, blossom blight severity, 864; on *Malus* sp., virulence, 1292, (1293); monoclonal antibody for detection by ELISA, 1609; streptomycin resistant strains, fatty acid content, 1604
—*E. carotovora*: aerobactin production, 1557; aerosolized cells, cloud condensation nuclei, 1570; inoculum, in irrigation water, potato stem rot effect, 1668; pectate lyase expression in potato tubers, 1551; pectate lyase gene from, characterization, 1535; polygalacturonase content, quantifying using diffusion assay, 1101
—*E. chrysanthemi*: cell pectate lyase release, lithium and sodium chloride effect, 213; lipopolysaccharide from, characterization and serological specificity, 996; strain characterization and classification, on hosts in Netherlands, 800, (805, 806)
—*E. herbicola*: antibiotic production by, 746; ice nucleation active strains, on leaf surfaces, antagonism, 444; ice nucleation expression, transcriptional regulation of *iceE*, 1535
—*E. stewartii*: on corn, detection in seed, monoclonal antibody use in ELISA and immunofluorescence, 1515; on corn, endosperm color effects, 909; isolate screening, ELISA tests, 1503; on sweet corn, hybrid reaction, and yield loss, 172
Erysiphe spp.
—*E. betae*, on sugarbeet, modeling interrelations, 1528
—*E. cichoracearum*, on *Phlox*, epidemiology factors, 358
—*E. graminis*: on barley, peroxidase change after inoculation, 1590; lucifer yellow microinjected into hyphal cells, iontophoretic, 1591; on wheat, virulence genes in Pennsylvania, 1506
Escarole, necrosis, viruslike particle association, detection, 1583
Eschen, D. J., 1526, 1594
Escudero, J., 857
Eshenaur, B. C., 627
Estévez, C., 857
Euschistus spp., on soybean seed, microorganism relation, 306
Evans, T. A., 864, 1579
Everts, K. L., 1502
Exserohilum turcicum
—on corn, lesion expansion, genetic analysis, 149
—on sweet corn, hybrid reaction and yield loss, 172
Eyal, H., 144
Ezzahir, B., 1545

Fagbenle, H. H., 1580
Fahey, J. W., 1608
Fail, G. L., 1564
Falk, B. W., 1517, 1560, 1561
Falkhof, A.-G., 1592
Faria, J. C., 1567, 1568
Farrand, S. K., 1535, 1587
Fatmi, M., 121
Fattouh, F. A., 1560, 1587
Felix-Gastelum, R., 1573
Feng, L. X., 1585
Fenn, P., 1534
Fenton, C. A. L., 139
Fenwick, H. S., 1526
Ferguson, M. W., 1580
Fernández, O., 858
Ferreira da Silva, A., 1571
Ferrell, G. T., 1533
Ferrer, E. R., 1570
Ferrin, D. M., 1521, 1576
Ferris, H., 1559, 1575
Festuca arundinacea, *Acremonium* endophyte in, detection method, 418
Fett, W. F., 1589
Fetzer, J., 1524
Figwort mosaic virus, in transgenic plants, genes I and VI effect, 1517
Filer, T. H., 626, 1559
Filonow, A. B., 1562
Finckh, M. R., 1570
Fisher, C. G., 1507
Fisher, G. A., 1603
Fisher, R., 1389
Fixen, P. E., 1561, 1596
Flaherty, L., 1541
Flax, rust of
—inhibitor genes, genetic properties, 342
—*L8* gene for resistance, 338
Fletcher, J., 1540
Flurkey, W. H., 1585
Flynn, J., 1540
Fogle, D., 1531, 1572
Foley, D. C., 1525
Forage grass, endophytic fungi in, detection method, 237, (238, 239)
Ford, E., 1549
Ford, R. E., 634, 1016, 1587
Fore, S. A., 1082
Forest pathology, in China, research and management, 1538
Fornecker, G. I., 861
Förster, H., 1617
Forster, R. L., 1562, 1565
Fouse, D. C., 1617
Fowler, H. A., Jr., 629
Franc, G. D., 1570
Francl, L. J., 159, 1539
Frank, J. A., 860, 861, 957
Franklin, K., 1518
Frankliniella spp., tomato spotted wilt virus vector, detection by ELISA, 1348
Franssen, J. M., 1337
Fraser, J. D., 1541, 1603
Fravel, D. R., 488, 1594
Frederiksen, R. A., 432, 1571, 1574, 1648
Freman, S., 1656
French, D. W., 887
French, J. C., 1564
French, R., 1560
French, R. C., 861, 1593
Frey, S., 1544
Frinking, H. D., 919
Fristensky, B., 1610
Fry, S. M., 1541, 1602
Fry, W. E., 555, 559, 565, 1532, 1539, 1542, 1543, 1615
Fuentes Davila, G., 1577
Fulbright, D. W., 751, 1550, 1565
Fumigants, methyl bromide, *Pythium ultimum* oospores sensitivity to, 1409
Fungicides (general) (see also Fungicides, specific)
—alfalfa foliar disease control, economic evaluation, 934
—black sigatoka on banana and coffee rust, techniques for screening, 1595
—*Colletotrichum coccodes*, conidial germination and sclerotial growth affected by, 1357
—evaluation on coffee foliage, 856
—organic phosphonates and inorganic anions in plants and soil, analysis using ion chromatography, 1150, *1512*
—*Pythium ultimum* oospores sensitivity to, 1409, (1410)
—*Rhizoctonia solani* and *Spongospora subterranea* on potato, evaluation, 856
Fungicides (specific) (see also Fungicides, general)
—benomyl, *Botrytis cinerea* resistant to, new benzimidazoles for, 613
—benzimidazole, *Venturia nashicola* resistant to, *N*-phenylcarbamate sensitivity, 695
—cymoxanil, synergism of mixtures, for metalaxyl-resistant *Phytophthora* of potato, 636
—fosetyl-Al, in plants and soil, analysis using ion chromatography, 1150, *1512*
—fosetyl-Na and phosphorous acid, *Phytophthora palmivora* resistant to, strain behavior, 974
—mancozeb, wheat glume blotch management, cultivation strategy in Maryland, 1525
—metalaxyl: for peanut pod rot, 1562; *Phytophthora infestans* resistant to, cymoxanil mixture for control, synergism, 636; *P. infestans* resistant to, estimation, 915; *P. infestans* sensitive isolates, 912; potato leaf blight control using computer simulation, 1532; potato leaf blight epidemic, model, 559; on potato leaves, distribution and temporal dynamics, 555; resistance management, simulation analysis in epidemics, 565
—oxycarboxin or polyoxin D, bean rust resistance affected by, 1454, (1455, 1456, 1458-1460)
—RH-7592, chemical and biological properties, activity, 1561
—thiabendazole, oak uptake and distribution, 629
—triadimefon: for powdery mildew of tomato, disease onset effect, 512; seed treatment for pine seedlings, 1606
Fungistatis, oils of basil and oregano, growth effect, 1545
Fusarium spp.: on conifer seedlings in nurseries, containerized, 1607; molecular tagging, application to disease study, 1550; monoclonal and polyclonal antibodies against, production, 1580; polyclonal antisera against, cross-reactivity effect, 1564; silica gel and soil storage, preservation method, 107; on sorghum seeds, from Africa, 1510; in soybean, trichothecene and nontrichothecene mycotoxins, 1552; steryl sulfate produced by, novel, 1591; on sugar beet substrate, mycotoxin production, 1552; toxigenic isolates from soil pastures in New Zealand, 1552; on wheat, occurrence on grain and pathogenicity to plants, 586
—*F. acuminatum*, on wheat roots, plant response from single conidia, 1574
—*F. crookwellense*, mycotoxins produced by, 1618
—*F. equiseti*, fusarochromanone biosynthesis, monoacetyl derivative, 1552
—*F. graminearum*, on wheat: group 1, soil moisture effect, method, 185; soil moisture potential, 185, *1260*
—*F. moniliforme*: from sorghum, Kansas isolates, 1519; on sweet corn, emergence effect, 1502; on sweet corn, maternal influence and host traits, 1596; vegetative compatibility groups, in asparagus, 1518
—*F. oxysporum*: on alfalfa, *Meloidogyne hapla* interaction, 421, *882*; on celery, race 2, cultural variability, 385; on cotton, vegetative-compatibility grouping, tissue and rhizosphere source, 852; on crucifers, solar heating and soil amendment effect,

289; on cucumber, nonpathogenic isolates as biocontrol for Fusarium wilt, 190; heating effect on propagules, sublethal, 1656; isozyme analysis, in races, 625; on muskmelon, vegetative compatibility and self-incompatibility, 668; muskmelon and nonhost crops colonized by, 1575; on pea, gene transfer, 1549; *Pseudomonas fluorescens* inhibitory to, fusarimycin production, 1522; on soybean, *Rhizoctonia solani* interaction on roots, 771; on sugar beets, root rot in Texas, 1544; on tomato, isozyme analysis and vegetative compatibility groups, 1543; on watermelon, race differentiation using vegetative compatibility, 1542; watermelon xylem exudates inhibitory to, 1523
—*F. proliferatum*, from corn ears, toxigenicity, 1258
—*F. roseum*, *culmorum*, in garlic cloves, control, 1575
—*F. scirpi*, on corn grain, toxigenic from China, 978
—*F. solani*: on cottonwood, isolation from wounds, ethylene production, 1261, (1262); naphthazarin phytotoxins produced by, immunoassay, 1589; on pea, chitinase and chitosan role, 1525; protoplast transformation, electric-pulse procedure, 1615; soilborne propagules of, enumeration using probable number method, 1531
—*F. subglutinans*: comparative pathology on pines, 1607; populations, genetic diversity, 1575
Fuson, G. B., 1641

Gaard, G., 345
Gabor, B. K., 1546
Gabriel, D. W., 1588
Gabrielson, R. L., 868, 1515, 1577
Gadani, F., 1587
Gadoury, D. M., 1413, 1507, 1538
Gaeumannomyces spp., on turfgrass roots, new species, taxonomy, and pathogenicity, 1521
—*G. graminis*: bacterial strains suppressive to, antibiosis genetics, 426; suppression by *Pseudomonas fluorescens*, siderophore and phenazine antibiotic role, 1522; on wheat, biocontrol with fluorescent pseudomonads, 1094
Galindo, J. J., 858
Gallenberg, D. J., 1615
Gallian, J. J., 1515
Gálvez, G., 856, 858, 859
Gamboa, A., 857
Ganbobo, M. S., 1507
Ganesa, C., 1585
Gárcia, A., 857
Gárcia, C., 627
Gárcia, J. M., 857
Gardner, D. E., 1586
Garibaldi, A., 1562
Garnsey, S. M., 1559
Garran, S., 739
Garraway, M. O., 1501, 1556
Garretty, W. N., 1388
Garza-Lopez, J. G., 440
Garzón, J. A., 626
Gaspard, J. T., 1559
Gazaway, W. S., 1564
Gbur, E. E., Jr., 1531
Gees, R., 350, 1558, 1593
Gendloff, E. H., 1564, 1580
Genetic diversity, host, effect on disease increase, models, 1087
George, R. A., 1631
George, S., 625, 627
Geranium, somaclone screening, bacterial blight resistance, 1565
Gergerich, R. C., 270, 1584
Gerik, J. S., 1174, 1340
German, T. L., 1584, 1586, 1599, 1602
Gershey, J. S., 1594
Gessler, C., 1066
Gevers, H. O., 65
Ghabrial, S. A., 1547
Giannini, J. L., 1000, 1502, 1503
Gibb, K. S., 1531, 1537
Gilbert, R. G., 1514
Gilbertson, R. L., 1567, 1568
Gilchrist, D. G., 1135
Gildow, F. E., 811, 863, 1507, 1508, 1512
Gillespie, C. T., 1513
Gillman, D. H., 1553
Gingery, R. E., 499, 1518
Giorda, L. M., 627, 1564
Gitaitis, R. D., 1551
Glawe, D. A., 1593
Gleason, M. L., 1565
Gliocladium spp.
—*G. roseum*, mycoparasite, protoplast fusion, 1603
—*G. virens*: mitochondrial plasmids in, nature of, 1591; plasmids of, 863
Globodera spp.: protein rate and morphological evolution among species, 900; second-stage larvae of, proteins and serological assay, 300
—*G. rostochiensis*, pathotypes, polypeptide maps, genetic variation, 894
Gloeodes pomigena, on apple fruit, pruning effect, 1004
Glomus spp.
—*G. etunicatum*, on peanut, tripartite system, 1567
—*G. mosseae*, monoclonal antibodies to, specificity, 1604
Goates, B. J., 1434
Godbee, J. F., 1516
Goldberg, K.-B., 1517, 1600
Goldstein, A. L., 1600
Golino, D. A., 285, 1602
Golinski, P., 1618
Gommers, F. J., 300, 1421
Gomphrena globosa, C_4 bundle sheath cells, comparison with and without virus, 1564
Gon, J., 1585
Gonsalves, D., 278, 1348, 1517, 1518, 1536, 1568
Gonzalez, C. F., 626, 1559, 1587
Gonzalez, D., 1588
Goodell, B., 1508
Gooden, D., 1544
Goodman, R. M., 32
Goodman, R. N., 1604, 1609
Goodwin, P. H., 1550
Goodwin, S. B., 1542
Gordon, D. T., 991, 1537
Gordon, T. R., 512, 668, 1017, 1520, 1575
Goth, R. W., 1530
Gotlieb, A. R., 1506, 1605
Gottwald, T. R., 739
Gough, F. J., 626, 1592
Gowda, S., 1517, 1600
Grafton, K. F., 1603
Graham, J. H., 365, 940, 1551, 1572, 1575
Graham, T. L., 1555
Graminella nigrifrons, maize chlorotic dwarf virus vector, infectivity and helper component, 499
Grantham, G. L., 831, 783
Grape
—Botrytis bunch rot, inoculum factors, 260
—downy mildew of: infection efficiency model, temperature and leaf wetness factor, 794; sporulation on leaves, model, 1316
—powdery mildew, dormant season eradicant sprays, 1507
Grapevine
—*Agrobacterium tumefaciens* biovar 3 in rhizospheres of, population dynamics, 945
—*Botrytis cinerea* on berries of, susceptibility evaluated, 1571
—evaporative potential in canopy, leaf removal effect, 1539
—leafroll disease, closterovirus-like particles associated with, 1568
—Pierce's disease: bacterial growth on media, 1602; multiplication and translocation of bacteria, 1541
—stem pitting and dsRNA, survey, 1568
Grasmick, D. L., 1538
Grau, C. R., 345
Graves, C. H., Jr., 626, 627, 629, 1562
Gray, F. A., 1514, 1564
Gray, L. E., 1502, 1504
Gray, S. M., 1043, 1509, 1538, 1583
Greathead, A. S., 1574, 1575
Green, R. J., Jr., 1502
Greisen, K. S., 1535
Grey, W. E., 1526
Griffey, C. A., 1582
Griffin, D. E., 627
Griffin, G. D., 421, 1514
Griffiths, H. M., 1616
Griggs, M., 1525
Grisham, M. P., 1371, 1530
Grogan, R. G., 1139
Gross, D. C., 1534, 1535, 1565
Gross, K. C., 1052, 1582
Groth, D. E., 627, 1612
Groth, J. V., 1604
Grothaus, G. D., 1516, 1576
Grumet, R., 1599
Grybauskas, A. P., 861, 864, 1521, 1525
Gubler, W. D., 1531, 1572, 1573, 1579
Gudauskas, R. T., 1564
Gudmestad, N. C., 205, 1381, 1589
Guerard, J. P., 1578
Gullino, M. L., 1562
Gulya, T. J., 1580, 1610
Gumpf, D. J., 285, 1559, 1602
Gunasinghe, U. B., 1584
Gunther, R., 1258
Gurian-Sherman, D., 1535
Gustine, D. L., 1523
Gutiérrez, A., 857
Gutterson, N., 1535, 1558, 1587
Gwinn, K. D., 414, 1524

Hadden, J. F., 1578
Hadidi, A., 575, 1600, 1601
Hadwiger, L. A., 1009, 1451, 1525, 1610
Hagan, A. K., 1564
Hagedorn, D. J., 1596
Hajdukiewicz, P. T., 1507
Hakimi, S. M., 1608
Halinsky, P. M., 1510
Hall, C. B., 1551
Hall, R., 1241, 1511
Halliwell, R. S., 627, 1586
Halloin, J. M., 1531
Halseth, D. E., 1578
Hain, K. S., 1590
Hamasaki, R. T., 1348
Hamdan, H.,, 1522
Hamilton, M. G., 1581
Hamilton, R. I., 875
Hamm, P. B., 1519
Hammerschlag, F. A., 1516
Hammond, J., 1518, 1600
Hammond, L. C., 1604
Hammond, R., 1518
Hampson, M. C., 1563
Hanau, R. M., 1502, 1504
Hancock, J. G., 1466, 1545

Hanlin, R. T., 1388
Hanna, W. W., 1179
Hansen, D. R., 1549
Hansen, E. M., 1519, 1534, 1555, 1606
Harlin, K. S., 1618
Harman, G. E., 520, 1511, 1523, 1549
Harrington, T. C., 676
Harris, A. R., 1575
Harris, C. M., 1617
Harris, K. F., 1060
Harrison, L., 1528
Harrison, M. D., 1688
Harrison, N. A., 462, 722, 1597
Hart, J. H., 256, 1554
Hart, L. P., 1673
Hartsell, P. L., 1617
Harvey, J. M., 1617
Hashimoto, H., 1307
Hassan, S., 1160, 1164
Hattermann, D. R., 1551
Hausbeck, M. K., 1508, 1520
Hawes, M. C., 1528, 1609
Hayashi, J., 1592
Hayashi, Y., 1627
Haygood, R. A., 627, 628, 1562
Headrick, J. M., 172, 227, 1155, 1502, 1596
Heagle, A. S., 1513
Heaney, S. P., 861
Hearne, P. Q., 1600, 1601
Heath, M. C., 1454, 1523
Heath-Pagliuso, S., 1556
Heaton, L. A., 1600, 1602
Hebard, F. V., 841, 1193, 1533
Hebeloma arenosa, on red pine, phosphorus relation, 1567
Hecquet, J. C., 1508
Hedin, P. A., 626
Heidel, A., 1532
Heimann, M. F., 1504
Heise, P. J., 1608
Helgeson, J. P., 1216
Hellmann, G. M., 1517
Helminthosporium carbonum, on corn
—cyclic tetrapeptides and chlamydocin effect, 1501
—HC-toxin synthesis, 1501
Hemming, B. C., 1503, 1544
Henderson, C. T., 1577
Hendrix, F. F., 626, 1572
Henecke, L. M., 1529
Henningson, P. J., 1589
Hennon, P. E., 1606
Henry, C. E., 1542
Henson, J., 1549
Hepburn, A. G., 1504
Hepperly, P. R., 1571
Herbicide, antidote, interaction with sorghum downy mildew, 1648, (1653-1665)
Hernández, A., 857
Hernández, M., 628
Hernandez, V. H., 1531
Herner, R. C., 682
Heron, D. S., 1522
Herr, L. J., 836, 1502, 1522
Hershman, D. E., 1547
Hess, J. R., 1610
Hess, W. M., 115, 1610
Hesseltine, C. W., 68
Heterobasidion annosum, intersterility genotypes
—in California and Oregon, 1554
—isozyme relation, 1534
Heterodera spp., protein rate and morphological evolution among species, 900
—*H. glycines*: biocontrol, 20 fungal candidates, 862; cysts of, fungi isolated from, on soybean roots, 1593; *Macrophomina* relation, nematode inoculum effect, 1583; on soybean, cyst detection using DNA hybridization probe, 1136
—*H. schachtii*, hybrid with *H. glycines*, comparison of juveniles, 863
Heteroderiadae, plasmid sensory organ in four species of, fine structure, 1515
Hewings, A. D., 1548, 1584
Heyuan, C., 1515
Hibben, C. R., 1554
Hibberd, A. M., 607
Hickey, K. D., 1508, 1562
Hickman, M. J., 1523
Hiddinga, H. J., 1517
Hiebert, E., 1128, 1266, 1567
Higgins, V. J., 1556
Highley, T. L., 862, 1590, 1606
Higley, P. M., 1515
Hildebrand, D. C., 1523
Hill, J. H., 1118, 1503, 1515, 1537, 1548, 1566, 1587
Hill, J. P., 656, 1574
Hill, R. R., 149
Hill, R. R., Jr., 790, 861
Hillman, B. I., 1550, 1600, 1601
Hindal, D. F., 860, 861, 863
Hine, R. B., 1521, 1529, 1544
Hinojosa, O., 1589
Hirano, S. S., 1551
Hiratsuka, Y., 1534, 1554
Hiruki, C., 1027, 1343, 1536
Hobbs, H. A., 1586
Hobbs, T. W., 266
Hocart, M. J., 1611
Hoch, H. C., 1033
Hodgin, V., 1550
Hoefert, L. L., 1564
Hohl, H. R., 350
Hoitink, H. A. J., 314, 836, 1447, 1522
Holland, G. J., 1502
Holt, J. S., 1000, 1502, 1503
Hop, downy mildew, spatial pattern in yards, 1389
Hopkins, D. L., 625, 1542, 1602
Hopkins, M. S., 628
Hoppe, H. H., 1503
Horn, B. W., 68
Horovitz, D., 1525, 1610
Howard, K. M., 1516
Howarth, A. J., 1599
Howd, D. S., 1524
Howell, C. R., 1075
Howie, W., 1558
Howell, W. E., 1547
Howie, W. J., 1094
Hoy, J. W., 1371, 1520, 1688, 1692
Hoying, S. A., 410
Hsia, C.-C., 978
Hsu, H. T., 1337, 1537, 1585
Hu, J., 1517
Hu, J. S., 1302, 1326, 1568
Hu, S. P., 1536
Huang, H.-C., 1569
Huang, P.-Y., 628, 1602
Huang, Y., 1610
Hubbard, J. D., 1221
Hubbes, M., 322
Huber, D. M., 1502, 1504
Hudelson, B. D., 1570
Hudson, R. A., 1559
Huerta-Espino, J., 1596
Huettel, R. N., 862, 1516, 1523
Huff, C. A., 790
Hughes, G., 883
Hughes, K. D., 1502
Hughes, T., 1544
Huisman, O. C., 708, 716, 1174, 1523
Hunger, R. M., 1503, 1526, 1612
Hunt, A. G., 1517
Hunt, R. E., 499
Hunt, R. S., 1533
Hunter, B. G., 1601
Hunter, J. E., 1565
Huot, C. M., 1595
Hurt, W. S., 1561
Hussey, R. S., 1567
Hutcheson, S. W., 1569
Hutchison, D. J., 1577
Hyakumachi, M., 1597
Hydrilla verticillata, biocontrol of, with fungi, 1593
Hypersensitivity, bacterial induction, peroxidase-mediated oxidation, 862
Hypoxylon atropunctatum, on oak, antibodies and immunohistology, 1534

Iberis umbellata, Alternaria leaf spot of, in California, 1613
Ichida, J. M., 1594, 1610, 1618
Ilarviruses, on almond, cherry, peach, and prune in California, 1573
Illman, B. L., 1590
Impatiens, tomato and other virus association, in Ohio, 1569
Impatiens balsamina, virus disease of, new, in Kenya, 1548
Indian peanut clump virus, host range, symptomatology, serology, and properties, 310, (313)
Inonotus tomentosus, on pine and spruce, stumps as inoculum source, 1534
Inouye, N., 1343
Inskeep, P. M., 1562
Isakeit, T., 1503, 1598
Ishii, H., 695
Ishimaru, C. A., 746
Ishimaru, C. I., 1557
Iuli, R. J., 1554
Ivanovic, M., 1503
Iyer, J., 1567

Jacks, T. J., 1589
Jackson, A. O., 1473, 1601
Jackson, K. E., 1562
Jackson, L., 1566
Jackson, M. A., 237
Jackson, N., 1521
Jacobsen, B. J., 1618
Jacobson, D. J., 668, 1575
Jaffee, B. A., 1284, 1559
James, R. L., 1533, 1607
Janisiewicz, W. J., 194, 1596, 1697
Janse, J. D., 800
Jarosz, A. M., 358
Jasalavich, C. A., 1565, 1597
Jeffers, S. N., 328, 1402, 1572
Jeger, M. J., 432
Jelkmann, W., 1560
Jellison, J., 1508
Jeng, R. S., 322
Jenkins, S. F., 595
Jenns, A. E., 1546
Jensen, K. F., 1581
Jeter, J. M., 1527
Jewell, F. F., Jr., 396
Jiang, J., 1527, 1616
Jiang, Y. P., 828
Jilka, J., 1587, 1599
Jiménez, J. M., 857
Jimenez-Garcia, E., 1579
Joaquim, T. R., 1519
Jochimsen, K. N., 1551
Joe, L., 1592, 1610
Johnson, C. S., 1515
Johnson, D. A., 1387, 1514, 1546, 1547
Johnson, D. R., 1616
Johnson, E. L. V., 1519, 1567, 1576
Johnson, G., 1540, 1541
Johnson, J. W., 1611
Johnson, K. B., 1198, 1503, 1529
Johnson, L. F., 435

Johnson-Cicalese, J. M., 237
Johnston, J. C., 1618
Johnston, R. H., 1611
Jones, A., 1402, 1581
Jones, D. A., 338, 342
Jones, F. E., 1118
Jones, J., 1556, 1596
Jones, J. B., 1552
Jones, K., 1577
Jones, M. E., 861
Jones, R. K., 628
Jones, S. V., 1526
Jones, W. B., 1610
Joppa, L. R., 1584
Jordan, C. M., 1556
Jordan, R., 1588, 1600
Joshi, J., 570
Jourdain, E. L., 1596
Joye, G. F., 1593
Juhnke, M. E., 1557
Julian, A. M., 1611

Kackley, K. E., 861, 1521
Kadish, D., 912, 915
Kado, C. I., 981
Kameya-Iwaki, M., 631
Kane, R. T., 1612
Kang, M. S., 909
Kaper, J. M., 1559, 1600
Karasevicz, D. M., 1509
Kartaatmadja, S., 1537
Katan, J., 852, 1656
Katan, T., 852
Katsuwon, J., 1591
Katz, B. H., 410, 945, 1506, 1551
Kawalek, M. D., 1558
Kawata, E. E., 1560
Kazmierczak, P. J., 1549
Kearney, C. M., 1517
Keen, N. T., 1535, 1557
Keinath, A. P., 1543
Kelemu, S., 1536
Keller, N. P., 1588
Kelley, K., 1531
Kelley, V. C., 1597
Kelley, W. D., 1606
Kelman, A., 996, 1216, 1430, 1551
Kendall, T. L., 1586
Kendra, D. F., 1525
Kenerley, C. M., 1603
Kenfield, D., 1528, 1591
Kennedy, B., 1524
Kennedy, B. S., 1583
Kennedy, G. G., 1043
Keppler, L. D., 860, 862, 1528, 1591
Kerby, K., 1590
Kerr, A., 1551
Kessler, K. J., Jr., 1606
Kester, D. E., 139
Ketring, D. L., 1547
Khaless, N., 1548
Khoury, J., 1331
Khurana, S. M. P., 1536
Kiernan, J. M., 1517, 1600
Killebrew, J. F., 1562
Kim, C.-H., 931
Kim, K. K., 488
Kim, K. S., 1584, 1585
Kim, S.-D., 1501
King, E. B., 1594
Kinloch, B., 1555, 1603
Kinney, P. M., 1616
Kinsbursky, R. S., 127
Kinscherf, T. G., 1569
Kirby, H. W., 934, 1561
Kirkpatrick, B. C., 1541, 1550, 1569, 1603
Kistler, H. C., 1549
Kitt, D. G., 1567
Kiwifruit, root and crown rot, in California, 1573

Klaassen, V., 1517
Kline, E., 1544
Klittich, C. J. R., 1519
Kloepper, J. W., 1055, 1521
Klopmeyer, M. J., 1430, 1576
Klos, E. J., 746
Kluepfel, D., 1544
Knievel, D. P., 1513
Knittel, R., 1513
Knoche, H. W., 1501
Knoke, J. K., 1540
Knoop, W. E., 626
Knorr, D. A., 1601
Knudsen, G. R., 1581, 1594
Ko, W. H., 335
Kobayashi, D., 1535
Kobayashi, H., 1307
Kober, S. K., 1515
Koch, E., 1503
Koeller, W., 1511
Koepsell, P., 1575
Koga, H., 1557
Kohls, C. L., 1561
Kohn, L. M., 1047
Kok, L. T., 1593
Köller, W., 1557
Kollöffel, C., 1421
Kolmer, J. A., 1542
Kommedahl, T., 107, 586, 978, 1258, 1525, 1545
Konai, M., 1588
Kontaxis, D. G., 1581
Kornegay, J., 1566
Kostka, S. J., 1540, 1541
Kosuge, T., 1556
Kotcon, J. B., 1514
Kraft, J. M., 1545
Krause, C. R., 1594, 1610, 1618
Krausz, J. P., 1531
Kronland, W. C., 820
Krupczak, D. L., 1508
Krupinsky, J. M., 1526, 1582
Kuan, T. L., 867
Kuć, J., 733, 1193, 1527, 1547, 1556
Kucharek, T. A., 1525
Kuhlman, E. G., 484
Kuhn, D. N., 961
Kuniyuki, A. H., 139
Kuske, C. R., 1569, 1603
Kuti, J. O., 862, 1617
Kwang-Ae Kim, K., 862
Kwok, O. C. H., 1556, 1557

Laccaria sp., nuclear migration medium for, 1501
Lacy, M. L., 1502
Lagena radicicola, biological characteristics, 1611
Lalancette, N., 794, 1316
Laliberte, M., 1055
Lamari, L., 1527, 1595
Lamka, G. L., 1503, 1515
LaMondia, J. A., 1518
Lampel, J., 1569
Landschoot, P. J., 1521
Lane, L. C., 1560
Langdale, G. W., 1526
Langenberg, W. G., 589, 1586, 1611
Langham, M. C., 1584
Lara, W., 857
Larkin, R. P., 1542
Larkins, B. A., 1560
Larsen, R. C., 1561
Lartey, R. T., 628, 1522
Latham, A. J., 1104
Latin, R. X., 1578
Laurence, J. A., 1168
Lavigne, R. J., 1564
Lawrence, G. W., 1514
Lawson, R. H., 1337, 1537

Layton, A. C., 961
Layton, M. B., 306
Lazo, G. R., 1529, 1609
Lazzari, F. A., 1553, 1617, 1618
Le, X. H., 1510
Leach, J. E., 1536, 1590
Leach, S. S., 1532
Leafhopper, vectors for maize chlorotic dwarf virus, phylogeny, 1683
Leary, J. V., 1498, 1536
Leath, K. T., 861, 1510
Leath, S., 1545, 1574
Leavitt, G., 1531
Leben, C., 179, 1551
Lee, I.-M., 1541, 1555, 1588, 1602
Lee, R., 1556
Lee, R. F., 1221, 1298, 1524, 1559, 1572
Lee-Stadelmann, O. Y., 550
Legard, D. E., 1565
Lei, C. H., 1587
Lei, J. D., 828
Leighton-Sands, J., 1580
Leland, T., 1016
Lennê, J. M., 131
Lentinula edodes, allozyme variation in, 1507
Leonard, K. J., 628, 1574
Leong, D. U., 1535
Leong, S. A., 1550, 1568
Leptosphaerulina, on alfalfa and white clover, disease gradients of leaf spots, 1571
—*L. briosiana*, on alfalfa, analysis of epidemics, 389
—*L. korrae*, *Ophiosphaerella* differentiated from, restriction fragment length polymorphism analysis, 1613
—*L. maculans*, on *Brassica napus*, isolate differentiation using isozyme polymorphisms, 1511
Leslie, J. F., 1519, 1567
Lesney, M. S., 1606
Letarte, J., 1506
Letter to the editor
—crop loss assessment models, spatial heterogeneity, 883
—disease resistance, nuclear structure role, 1009
—peanut stripe virus, naming of, 631
Lettuce
—anthracnose, spread in space and time, 1615
—aster yellows agent for, purification using affinity chromatography, 828, (829)
—corky root of: bacterial cause, 1551; genetics of resistance, 1145; gram-negative bacterium cause, 1139, (1141-1144); nitrogen effect, 1544
Lettuce infectious yellows virus, characterization, 1561
Leucocytospora kunzei, vegetative compatibility groups, 256, (257)
Leucostoma spp., on peach, suberin formation and susceptibility, 1070
—*L. persoonii*: hypovirulent strains, nitrogen metabolism, ds-RNA, 1527; *L. cincta* differentiated from by isozyme polymorphism, 1518
Leung, H., 1227, 1550
Leveillula taurica, on tomato, planting date and triadimefon effect on disease onset, 512
Levy, M., 358
Lewandowski, D., 1599
Lewis, J. A., 862
Lewis, K. J., 1534
L'Hostis, B., 1518
Li, X. H., 1508
Liao, C. H., 1552
Libby, W. J., 1555, 1603
Liddell, C. M., 185, 1578

Lifshitz, R. L., 1521
Lightfield, A. R., 861, 1593
Lile, L. S., 1572
Lillehoj, E. B., 1376, 1589
Lim, G., 1552
Lim, S. M., 1504, 1542
Limonomyces roseipellis, *Pyrenophora tritici-repentis* ascocarp formation suppressed by, 1254
Lin, H., 1528
Lin, Z., 1584
Linde, D. C., 1604
Lindemann, J., 1592, 1610
Linderman, R. G., 366, 1567
Lindner, W. A., 213
Lindow, S. E., 444, 1535, 1552, 1608
Lindsey, D. L., 1530
Line, R. F., 451, 457, 543, 1542, 1546
Lipps, P. E., 756, 1529
Lister, R. M., 766, 1560, 1587
Liu, H., 1576
Liu, H.-Y., 1561, 1583
Liu, J., 1585
Liu, K.-M., 550
Liu, L. J., 1542, 1603
Liu, Z., 1502, 1523
Livingston, W. H., 1508, 1555, 1608
Livore, A., 627
Lizardi, E., 1542, 1603
Lizárraga, C., 1597
Ljubich, A., 1580
Lo, J.-Y., 1442
Lockhart, B. E., 1548, 1559, 1566
Lockwood, J. L., 1503, 1597, 1598
Loebenstein, G., 809
Lojkowska, E., 1216
Lommel, S. A., 1517, 1518, 1559, 1561, 1586
Long, D. L., 1614
Loomis, R. S., 1528
Loopstra, E. M., 971
Loper, J. E., 166, 1535, 1557
López, E., 857
Lorang, J. M., 1579
Lorbeer, J. W., 385, 966, 1078, 1578
Loria, R., 1509, 1540, 1543, 1548, 1585
Lucas, B. S., 1563
Lucas, J. A., 1611
Luciano, C. S., 1531, 1537
Ludwig, R. A., 1529, 1609
Luhn, C. F., 1573, 1597
Lukezic, F. L., 861, 1523
Lumsden, R. D., 863, 1594
Lundquist, J. E., 1555
Luo, P.-C., 550
Lupine, drippy pod, bacterial cause, 1565
Luteovirus, detection and diagnosis of infection from, monoclonal antisera, 1537
Luthe, D., 629
Luttrell, E. S., 53, 75
Lutz, A., 1576
Lyamani, A., 1598
Lycopersicon peruvianum, tomato yellow top virus and potato leaf roll virus on, light quality effect on translocation, 1160
Lytle, F. E., 1502

MacDonald, J. D., 1569
MacDonald, W. L., 863, 1554
Mace, M. E., 1557
MacFall, J. S., 1567
Mackay, W. A., 1617
MacKenzie, D. R., 931
Macrophomina phaseolina
—on bean, resistance to, 857
—host selection of isolates, 1563
—microsclerotia of, tillage effect on spatial pattern, 217
—in soil, biological activity, 1577
Madden, L. V., 159, 240, 246, 794, 822, 1316, 1361, 1447, 1529, 1539, 1540, 1571, 1683
Magill, C., 627
Magnaporthe sp., on bluegrass, water stress effect, 861, 1521
—*M. grisea*: chromosomal segments in, meiotic instability, 1550; on rice, genetic analysis of virulence, 1227
Maher, E. A., 1551
Mahmood, T., 628
Main, C. E., 110
Maize (see also Corn), *Bipolaris maydis* on, proteolytic activity and temperature stress, 1556
Maize chlorotic dwarf virus
—leafhopper transmission, infectivity and helper component, 499
—spread from point sources, 1540
Maize chlorotic mottle virus
—cytopathology and ultrastructure, 1537
—genome organization, 1517
—leafhopper vectors, phylogenetic relatedness, 1683
Maize dwarf mosaic virus
—coat protein cistron, cloning and sequencing, 1599
—resistance gene mapping, restriction fragment length polymorphism, 1543
—RNA translation, properties, 1537
—in sorghum: strain-B, titer variation, 208; virus accumulation in genotypes, 1564
—strains A and B, detection with ELISA, double-antibody sandwich, 1118
Maize necrotic lesion virus, satellite-like particles of, 1585
Maize stripe virus
—multiplication in *Peregrinus maidis*, 991
—noncapsid protein gene encoded, isolation of, 1518
—virion RNAs, hybridization analysis, 1517
Maize white line mosaic virus, viruslike particles in infected roots, 1548
Malus sp., fire blight, virulent strains, 1292, (1293)
Malvick, D. K., 625, 1366, 1527, 1587
Mango, Phytophthora crown and root rot, in nursery-grown trees, 1572
Manion, P. D., 1555
Manning, W. J., 1507, 1508
Manohar, S. K., 310
Mansell, R., 1589
Mansky, L. M., 1587
Mao, G. H., 1509, 1557
Maple, bacterial leaf spot, population dynamics, 1366
Marek, E. T., 1615
Marois, J. J., 260, 1516, 1539, 1571, 1573, 1701
Marshall, D., 627, 628, 952, 1614
Marshall, J. M., 862
Marshall, P. T., 1554
Martens, J. W., 526
Martin, F. N., 1542
Martin, R. R., 1537, 1560, 1636
Martin, R., 1549
Martin, S. B., 379, 628
Martin, S. P., 1409
Martin, T. J., 703
Martinetti, G., 1535
Martinson, C. A., 1525
Marton, C., 1525
Martyn, R. D., 625, 626, 628, 1523, 1544
Masirevic, S., 1610
Masuko, M., 1627
Masuta, C., 1601
Mata, F., 856
Matejka, J. C., 1234, 1572
Matheron, M. E., 1234, 1572
Mathieson, J. T., 1513
Mathre, D. E., 1526, 1611
Matsubara, D., 1556, 1592
Matsumoto, T. T., 861, 1530
Matteoni, J. A., 1554
Matthews, F. R., 1607
Matthysse, A. G., 1322
Mau, R. F. L., 1348
Mauk, P. A., 1544, 1662
Mauza, B. E., 1558
Maxwell, D. P., 1567, 1568
May, B., 1507
Mayhew, D. E., 1548
Maynard, S. F., 1555
Mays, D. A., 629
Maytac, C. A., 640
McBeath, J. H., 1554, 1566, 1589, 1616
McCain, A. H., 1017, 1520, 1575, 1612
McCall, M. A., 1509
McCammon, S. L., 1602
McCann, M., 1604
McCarter, S. M., 628
McCarty, J., 861
McCarty, M., 1592
McClary, R. D., 1504
McCormick, S. P., 1582
McCracken, F. I., 1534
McCulloch, C. E., 555
McCutchan, J., 1535
McDaniel, L. L., 1583, 1597
McDaniel, L. R., 543
McDermott, J. M., 1529
McDonald, B. A., 1529
McDonald, D., 659
McEntee, J. P., 628
McGee, D. C., 1503, 1515, 1598
McGrath, M. T., 1570
McGuire, R. G., 739
McLaughlin, M. R., 1584, 1586
McLaughlin, R. J., 1609
McLean, K. S., 1514, 1615
McLeod, A. R., 88
McMaster, B. J., 1543
McMillan, M. S., 1530
McMillan, R. T., Jr., 1527
McMullen, M. D., 1518, 1543
McRae, C. F., 1182
McRoberts, R. E., 831
Media, Nash and Snyder, storage temperature and time effects, 1616
Mehan, V. K., 659
Mehdizadegan, F., 1592, 1589
Melampsora lini
—on flax: inhibitor genes, genetic properties, 342; *L8* resistance gene, 338
—pathogenicity inheritance, 1543
Melcher, U., 1586
Melgarejo, P., 888
Mellano, M. A., 1569
Meloidogyne spp.
—*M. hapla*: on alfalfa, *Fusarium oxysporum* interaction, 421, *882*; on alfalfa, *Phytophthora megasperma* relation, factors, 1514; on carrots, spatial pattern and sequential sampling, 604
—*M. incognita*: gall formation affected by rhizobacteria, 1466, (1468); mycorrhizal interaction, factors, 1567; on tomato, feeding sites, apoplastic fluorescent dye for transport, 1421, (1423)
—*M. javanica*, in tissue culture, *Pasteuria penetrans* reproduction, transformed roots, 1284
Melon (see Muskmelon)
Melon necrotic spot virus, cucumber necrosis virus genomic sequence compared to, 1601
Melouk, H. A., 625, 629, 1547
Melton, T. A., 1561
Melvin, B., 1503, 1569
Mendoza, L. E., 628
Menezes, J. R., 650
Menge, J. A., 1519, 1567, 1576
Mengistu, A., 1579

Menkissoglu, O., 1608
Mergoum, M., 1574
Meronuck, R. A., 1258, 1553, 1618
Merrill, W., 887, 1511, 1512
Metz, J. A. J., 54, 59, 919
Meyer, J., 1576
Meyer, R. J., 862
Meyer, S. L. F., 862, 1523
Micales, J. A., 862, 1396
Michailides, T. J., 1531
Michelmore, R. W., 1145
Michels, D. C., 1529
Michna, A., 863
Mihail, J. D., 1564
Mildenhall, J. P., 213
Miles, G. E., 1578
Miles, M. R., 1604
Miles, N. W., 1070
Milgroom, M. G., 555, 559, 565
Milholland, R. D., 627, 1541, 1602
Millar, A. W., 1518, 1585
Miller, D. P., 1540
Miller, F. R., 1564
Miller, J. B., 1261
Miller, J. D., 1575
Miller, J. F., 1580
Miller, L. I., 863
Miller, M. E., 626, 1579
Miller, N. R., 1509
Miller, R. W., 1572
Miller, S., 1576
Miller, S. A., 1516, 1576
Miller, T., 1516, 1607
Millikan, D. F., 507
Millner, P. D., 1604
Mills, P. R., 1518, 1585
Milus, E. A., 1564
Mink, G. I., 1160, 1547, 1605
Minton, N. A., 1577
Mircetich, S. M., 817, 846, 1547, 1558, 1573
Mirocha, C. J., 1258, 1552
Mischke, C. F., 1591
Mischke, S., 863, 1591
Misumi, D., 1552, 1592
Mitchell, D. J., 1478, 1484, 1538, 1598
Mitchell, J. E., 949
Mitchell, J. R., 1578
Mittak, V. L., 1506
Mizumoto, C. Y., 1550
Mo, Y.-Y., 1534
Moayeri, A., 1592
Models
—almond bud failure, noninfectious, Weibull distribution, 139
—crop loss assessment, spatial heterogeneity, 883
—Douglas-fir and laminated root rot, strategy and development, 403
—downy mildew of grapes: infection effiency, factors, 794; sporulation, quantitative, 1316
—epidemiological principles for fungicide resistance management, simulation analysis, 565
—focus expansion in plant disease: rate, 54; stripe rust of wheat and downy mildew of spinach, 919
—metalaxyl for potato leaf blight epidemic, 559
—*Mycosphaerella fragariae*, temperature and moisture effect, response to germination and growth, 645
—parameter-sparse, focus expansion in plant disease, 59
—Pythium blight prediction, evaluation using antibody-aided detection technique, 1612
—resistance gene deployment effect on disease increase, 1087
—root growth, conceptual, 1598
—tobacco virus epidemics, spatio-temporal autoregressive integrated moving-average processes, 1361
—*Verticillium dahliae* on potato foliage, infection rate and temperature, 1198
Mogen, B. D., 1381
Mohan, S., 1537
Mojdehi, H., 1598
Moline, H. E., 1582
Moncrief, J. F., 1545
Monilinia spp.
—*M. fructicola*: growth, cell membrane permeability, and ultrastructure, sterol inhibitor effect, 1033, (1035, 1037-1040); on peach and cherry fruit, temperature and wetness effect, 1352
—*M. laxa*, biocontrol with *Penicillium frequentans*, 888
Moniliophthora roreri, spore germination, isolate compatibility, and cacao seedling infection, 858
Monis, J., 1560
Monllor, A. C., 857
Monoclonal antibodies, *Erwinia* spp. identified by, serological probes, 1430
Montasser, M. S., 1559
Monte-Neshich, D. C., 1504
Moore, L. D., 1513, 1581
Moore, L. W., 1237, 1366
Moorman, G. W., 1531
Mora, B., 856, 858, 859
Mora, F., 858
Morales, A., 856, 859
Morales, F., 858, 1568
Morris, T. J., 154, 1473, 1600, 1601, 1602
Moss, M. A., 110
Moyer, J. W., 1043, 1582
Mueller, W. C., 1528
Muimba-Kankolongo, A., 1509
Muldoon, A. E., 1559
Mullin, B. A., 1566
Mullin, R., 154, 1601
Mulrooney, R. P., 864
Mundt, C. C., 1087, 1570
Munkvold, G., 1531
Munnecke, D. E., 289
Munster, M. J., 1580
Murakishi, H. H., 1511, 1536
Murray, T. D., 1542, 1616
Muskmelon
—Fusarium wilt, resistant breeding lines, 630
—powdery mildew of: decision support system, 1578; epifluorescence microscopy in genotypes, 144, (146, 147)
—root rot in Texas, 626
—sudden wilt, *Pythium myriotylum* occurrence, 1579
—virus decline, in South Texas, 1579
—watermelon mosaic virus 2 on, resistance related to virus movement in leaves, 1043, (1046)
Mycena citricolor, on coffee, bacteria antagonistic to, 858
Mycoherbicide, *Colletotrichum* spp. host specific in leguminosae, 986
Mycoplasmalike organism
—ash yellows, biotinylated cloned DNA probe for detection, 1555
—aster yellows: detection using cloned DNA and RNA probes, 1541; in lettuce, purification using affinity chromatography, 828, (829); plasmid cloning and isolating, 1569
—aster yellows and maize bushy stunt, homology between plasmids, 1603
—biotinylated cloned DNA fragments from, 1541
—elm yellows and tomato big bud, RNA fragments of, molecular cloning and screening, 1602
—fluorescence microscopy for detection, compression technique, 118, (119), *882*
—maize bushy stunt, detection using DNA probes, 1597
—virescence agent, beet leafhopper transmission, flowering induced by, 285
—western X-disease: genetic and serological relations, 1603; robosomal RNA gene from, cloning and partial sequence, 1541
Mycorrhizae
—host specificity and recognition, 375
—ethylene production by, methionine and ACC utilization, 1508
—rhizosphere microflora, the mycorrhizosphere effect, 366
—soilborne nematodes and fungi interaction, phosphorus role, 371
—soilborne plant pathogen interaction, symposium introduction, 365
—VA, spore germination in stored soil, five matric potentials, 1604
Mycosphaerella spp.
—*M. fragariae*, conidiospore germination and germ tube elongation, temperature and moisture effect, models, 645
—*M. graminicola*, DNA characterization, 627
Mycotoxins
—aflatoxin: *Aspergillus flavus*, pH effect, 1250; corn in controlled environment, 68
—cerato-ulmin, from *Ophiostoma ulmi*, detection by chemistry and microscopy, 322, (324-326)
—cercosporin, *Cercospora* and *Neurospora* protoplast response to, 414
—*Fusarium scirpi* from corn grain, in China, 978
—trichothecene, in maize and wheat tissues, inhibition of, 1673
Myers, R. F., 1507
Myrothecium roridum
—pathogenic isolates, comparison, 862
—roridin E production, muskmelon cell wall extracts, 1617
Myzus persicae, potyvirus vector, virus quantity required, 104

Nagel, J., 1221
Nageswara Rao, R. C., 659
Nameth, S. T., 1520, 1521, 1569
Narayanan, K. R., 1527
Nash, B. L., 1509
Nault, L. R., 499, 991, 1683
Navot, N., 508
Neck, J. S., 1567
Nectarines, plastic wrapped, decay control, 1618
Nectris haematococca, macroconidia, plant surface attachment, 1523
Neely, D., 1531
Nees, D. W., 1609
Nekouam, N., 1509
Nelson, B., 1470
Nelson, D. L., 1607
Nelson, L. A., 1004
Nelson, M. R., 1579
Nelson, P. E., 1510
Nematicide, sodium tetrathiocarbonate, activity to six *Phytophthora* spp., 1234
Nemec, S., 1589
Neurospora spp., protoplast regeneration, cercosporin response, 414
Newman, M. A., 1561
Newton, P. J., 1510
Nezara viridula, on soybean seeds, microorganism relation, 306
Ng, T. J., 1617
Nguyen, T. K., 1298
Niblett, C., 858, 887, 1561
Nicholls, T. H., 831

Nicholson, R. L., 1588
Nicotiana edwardsonii, virus hosts, transformation and regeneration, 1600
Niessen, A. I., 858
Nigh, Jr., E. L., 1532
Nolt, B. L., 310
Norelli, J. L., 410, 1292
North, L. H., 1617
Northover, J., 613, 1352
Notteghem, J. L., 1227
Novacky, A., 1589
Novak, L. A., 1047
Nunez, J., 1578
Nus, A., 1607, 1613
Nuss, D. L., 1550
Nutter, F. W., Jr., 1530
Nutter, R. C., 1517

Oak
—endophytic bacteria in, relation to oak wilt, 626
—leaf symptoms in Pennsylvania, maple comparison, 1509
—wilt of: biocontrol with *Pseudomonas*, 1559; short-term susceptibility tests, 1554
—xylem-inhabiting bacteria, fastidious, 628
Oats (see also *Avena sterilis*)
—genotype relation to ice-nucleation-active bacteria, 952
—Pyrenophora leaf blotch, rate-limiting resistance, 957
Obituaries
—Harold W. Bockstahler, 505
—Arthur B. Burrell, 506
—Norma Louella Cashion, 53
—Vincent W. Cochrane, 1387
—Harold Homer Foster, 633
—Henryk Jedlinkski, 634
—Tsune Kosuge, 1135
—William Q. Loegering, 507
—Everett Stanley Luttrell, 1388
—Charles Joseph Nusbaum, 885
—Joseph Bjorn Skaptason, 886
—Fred Harrison Smith, 1015
—Michael Thomas Turner, 1016
—F. A. Wood, 887
—Paul Allen Young, 635
Ocamb-Basu, C. M., 100, 1004, 1545
Odvody, G. N., 1648
Oerke, E. C., 1592
Ogawa, J. M., 1519, 1531, 1539, 1616
Ohr, H. D., 1557
Olah, A. F., 1543
Olanya, O. M., 217, 1571
Oldfield, G. N., 285, 1602
O'Leary, A. L., 1593, 1595
O'Leary, D. J., 1593
Oleson, A. E., 1381
Olsen, M. W., 1521, 1595
Olson, A. J., 1519
Olson, C. W., 1510, 1511, 1533
Olson, J., 1562
Olszewski, N., 1559
Omer, M. A., 1563
O'Morchoe, S. B., 1535
O'Neill, N. R., 1590
Onion
—Botrytis leaf blight of: precipitation and infection potential, 1078; spore episode forecasting in New York fields, 966
—mycorrhizae: formation, actinomycete effect, 1567; in fumigated soil, growth response, 1567
—pink root disease of, resistant cultivars, assay, 115
—root resistance in, pathogen population and soil fumigation response, 1530
—root rot, *Pythium* spp. cause, 1578
Onyike, N. B., 1510
Ophels, K., 1551
Ophiosphaerella herpotricha, on bermudagrass, in Kansas, 1613
Ophiostoma ulmi
—cerato-ulmin detection in isolates of, electron microscopy, 322, (324-326)
—on elm, mycovirus effect, 1593
Ordentlich, A., 84
Ornelas, S. V., 1530
Orr, D. B., 306
Orser, C. S., 1527, 1609
Orth, C. E., 1525
Osada, S., 628
Osburn, R. M., 1246
Osman, S. F., 1589
Ostlie, K. R., 1545
Ostry, M. E., 1608
Otrosina, W., 1533, 1534, 1554, 1608
Ouchi, S., 1307
Oudemans, P., 1519
Ouimette, D. G., 1150, 1562
Ould El Ghaouth Magary, A., 1509
Ovalle, W., 857
Ownley, B. H., 1569
Ozmon, E. A., 586

Pacumbaba, R. P., 629, 1563
Pair, J., 1613
Palm, E. W., 1563
Palmer, M. A., 831, 1532, 1608
Palukaitis, P., 1326
Panaccione, D. G., 1502, 1504
Pan, S. Q., 733
Panesar, T. S., 1514
Panicum mosaic virus
—on St. Augustinegrass and centipede grass in South Carolina, 627
—satellite RNAs, structure and relations, 1601
Paniguchi, G. Y., 1606
Panopoulos, N. J., 1535, 1552
Pansy, downy mildew, in California, 1613
Papavizas, G. C., 488, 862
Papaya mosaic potexvirus, RNA detection in, cloned cDNA biotin and ^{32}P-labeled probes, 1425
Papaya ringspot virus
—amorphous inclusion protein, monoclonal antibody for, 1537
—coat protein sequence, heterogeneity in mutant, 1518
Pappu, H. R., 1343
Paris, C., 1609
Park, C.-S., 190
Parke, J. L., 1594
Parker, J. M., 1615
Parman, 1615
Partridge, J. E., 1550
Paspalum, leaf blight, incidence and severity, 1571
Passion fruit, mosaic of, in Puerto Rico, 857
Pasteuria penetrans, tissue-culture system, reproduction, with nematode and *Agrobacterium*-transformed roots, 1284
Pataky, J. K., 172, 227, 1155, 1502, 1504, 1581, 1596
Pathan, M. A., 1504, 1592
Patrick, Z. A., 1544
Patterson, C. L., 1545, 1572
Patton, R. L., 1581
Paul, C. P., 751, 1560
Paulitz, T. C., 190, 1567
Pawlosky, R. J., 1552
Paxton, J. D., 1000, 1502, 1503
Payne, G. A., 1376, 1549
Payne, J. A., 1568
Pazur, C., 1527
Pea enation mosaic virus, satellite element characterization, 1560
Peach
—bacterial spot of, differential virulence on stone fruits, 1312
—*Botryosphaeria* spp. on, presymptom histopathology, 1109, (1111-1116)
—brown rot, temperature and wetness effect, 1352
—canker, suberin formation and susceptibility, 1070
—gummosis, captafol and cultural practice effect, 1572
—nematode overwintering, population dynamics, 1514
—Phytophthora root rot and stem canker, systemic fungicides for, 1562
—pruning wounds, lignin stimulation, chemicals responsible, 1572
—root-knot nematode of, response in greenhouse and field plots, 1516
Peanut
—*Aspergillus flavus* on, resistance, drought stress management for screening, 659
—Cercospora leafspot, calibration using progression model coupled to a peanut growth simulator, 1615
—disease control with ethyltrianol, chemigation, and ground sprays, 1561
—early leafspot of, chlorothalonil and soybean oil for, 861
—leaf spot of: advisory modification for genotype resistance, 640; resistance related to temperature and humidity, 493
—protein pattern changes, *Aspergillus* spp. effect, 1591
—Sclerotinia blight of, environmental factors, 672
—soilborne diseases, hexaconazole applications for, 861
Peanut mottle virus
—genome characterization, in vitro translation, 1128
—naming of, letter to editor, 631
—root and shoot development affected by, 1547
Pear
—blast and tip dieback of, population dynamics of *Pseudomonas*, 1366
—*Botrytis* and *Penicillium* infection: biocontrol, 1697; wound-healing process, 1596
—decay fungi, disinfestant and salt-surfactant solution combinations, 1553
—postharvest decay, calcium chloride for, 1553
Pearson, C. A. S., 1583
Pearson, R. C., 1413, 1507, 1538
Peas
—Aphanomyces root rot resistance in, 1545
—crown gall susceptibility, one cultivar characterization, 1609
—disease resistance response genes: major gene control, 1525; sequence analysis, 1610
—Fusarium wilt of, histopathology and ultrastructure in vascular system, 1528
—pea mosaic virus and bean yellow mosaic virus of, mixed infection, aphid transmission, 1586
—*Pseudomonas syringae* on, races 1, 2, and 3, host response, 1451
Pecan
—cotyledon spot, postharvest, bacteria, 1605
—phenolics in, histochemical stains for identification, 626
—scab on leaves of, development, 1104, (1105-1107)
Pedersen, W. L., 1529, 1561
Peever, T. L., 1556
Pell, E. J., 1513
Pelletier, J. R., 1539
Peng, Y. F., 426
Penicillium spp., on tulip bulbs, pathogenicity, fungicide resistance, and

ethylene production, 682
—*P. digitatum*, sporulation, control with imazalil, 1553
—*P. expansum*: on apple, biocontrol, 1697; polygalacturonase activity, inhibition by calcium, 1052
—*P. frequentans*, biocontrol of *Monilinia laxa*, substances, 888
Pennisetum spp.
—*P. glaucum*, Bipolaris leaf spot, genetics of resistance, 1179
—*P. typhoides*, seed mycoflora in Niger, 1507
Pennypacker, B. W., 1510
Pennypacker, S. P., 579, 926, 1508, 1520, 1570
Pepin, H. S., 1516
Pepper (see also *Capsicum annuum*), bacterial diseases of, cultural control, 1605
Percich, J. A., 1595, 1616
Peregrinus maidis, maize stripe virus multiplication in, 991
Perez, A., 626
Perez, B. A., 1595
Peridermium spp.
—*P. filamentosum*, on pine, scenic beauty effect, 1554
—*P. harknessii*: genetic architecture, in California pine forests, 1555; in ponderosa pine, enzyme analysis, 1607
Permar, T. A., 1559
Peronosclerospora spp., isozyme analysis and aminopeptidase activities within genus, 1396
—*P. sorghi*, oospore spatial patterns, in soil and plants, 432
Peronospora spp.
—*P. farinosa*, on spinach, focus expansion model, 919
—*P. parasitica*, on broccoli and cauliflower, resistance in plant introductions, 1596
—*P. tabacina*: sporulation and viability, temperature effect, 110; on tobacco, colonization and phytoalexin accumulation, in immunized leaves, 1193, (1195); on tobacco, stem infection protects against blue mold, carbohydrate changes, 733; on tobacco, systemic resistance, tobacco mosaic virus induction of, 1547
—*P. trifoliorum*, appressorium differentiation by, thigmotropic stimulus, 1617
Perring, T. M., 1536, 1548
Persimmon, decline of, 1568
Person, C. O., 1529
Perumalla, C., 1523
Pesic, Z., 1027
Pesticides, registration status of IR-4, ornamental program, 1532
Petersen, F. P., 1516, 1576
Peterson, C. A., 1572
Peterson, C. M., 628, 1522
Peterson, G. L., 1276, 1396, 1491, 1530
Peterson, G. W., 1607
Peterson, J. L., 1506
Petrunak, D. M., 863
Petsche, D. M., 1047
Pettit, R. E., 1591
Petty, I. T. D., 1601
Pfender, W. F., 1254, 1594, 1611, 1614
Phakopsora pachyrhizi
—on soybean, isozyme comparison in two hemispheres, 1491
—teliospores of, infection structure and germination, 1503
Phaseolus spp.: pathogen extraction method, seed health test, 1515
—*P. vulgaris*: anthracnose, resistance detection, Brazilian races, 650, (652, 654); bacterial brown spot, spatial patterns, adaptive sampling for, 1570; bean rust epidemic, development in alternate rows of resistant and susceptible beans, 1210; common blight of, hydrogen fluoride effect on growth and fluoride accumulation, 1168; disease resistance, multiple, 1596; golden mosaic virus on, tolerance and symptomatology, 859; lines tolerant to mosaic, in Mexico, 857; *Macrophomina phaseolina* on, resistance evaluation, 856; *Meloidogyne incognita* and *M. hapla* resistance, host suitability, 1566; *Rhizoctonia solani* on, induction by *Rhizoctonia*-like fungus, electron microscopy, 1524; rust of, cultivar reactions, 864; rust of, oxycarboxin or polyoxin D effect on resistance, 1454, (1455, 1456, 1458-1460); rust of, resistance related to cell wall modification, 1523; rust resistance in, race-nonspecific, leaf pubescent effect, 1566
Phellinus weirii
—on Douglas-fir, modeling control strategy, 403
—host specialized biological species, 1555
Phelps, D., 1589
Phialophora gregata
—soybean cell response, 1504
—on soybean, development, 1502
Philips, F. W., 1566
Phillips, D. J., 1618
Phillips, D. V., 266, 1546, 1579, 1618
Phillips, J. D., 1504
Phipps, P. M., 861, 863
Phlox, powdery mildew of, epidemic factors, 358
Phoma medicaginis
—on alfalfa, fungicide evaluation, 934
—bacterial antagonists of, screening method, 861
Phymatotrichum omnivorum, on wine grapes, control with ammonium thiosulfate in irrigation systems, 1521
Physalospora obtusa, spore germination, temperature and moisture effect, 1573
Phytoalexins
—glyceollin: effect on red beet ATPases, 1000; on soybean, effect on plasma membrane and tonoplast, 1503
—scoparone, associated with citrus resistance to *Phytophthora*, 1678
Phytophthora spp.: on almond bark, lignin formation from, quantification, 473; on deciduous fruit crops, protein electrophoresis for species separation, 1402; detection in tissue using polyclonal and monoclonal antibodies, 1516; in forests of western North America, 1519; growth and sporulation, sodium tetrathiocarbonate effect, 1234; isoenzyme studies in, 1519; mitochondrial DNA, genetic variation, 1617; oospore germination, pellucid body fusion, 1616; oospore viability, criteria, 1527; on peach, relative virulence of ten species, 1573; in soil, ELISA detection, 1576
—*P. cactorum*: on apple, root rot affected by flood duration, 846; on apple trees, primary inoculum source, 328, (332); in soil, detection and quantification, 949; on strawberry, epidemic analysis, 246; on strawberry, epidemics and weather variables, 822
—*P. capsici*, on pepper, isolate characterization in North Carolina, 1582
—*P. cinnamomi*, *Myrothecium roridum* as biocontrol agent, 1558
—*P. citrophthora*, citrus root rot: ecology, 1519; phytoalexin for resistance, 1678
—*P. fragariae*, on strawberry, immunoenzymatic detection, 1022
—*P. infestans*: arachidonic acid produced by, in potato tissue, 1590; fungicide resistance management, simulation analysis, 565; metalaxyl resistance, estimation of, 915; metalaxyl-resistant populations, fitness of isolates, 912; mitochondrial DNA polymorphism in, 1542; nuclear DNA and ploidy of, 1511; Peruvian isolates of, characteristics, 864; on potato, metalaxyl-resistant, cymoxanil mixtures, 636; on potato, resistance, cytology, 350, (354, 355); on potato and tomato, genetic control of virulence, 1543
—*P. megasperma*: glyceollin effect on, 1502; on soybean, interracial heterokaryons, virulence, 961; on soybean, metalaxyl tolerance, natural, 1516; on soybean, root rot in aeroponic culture, 1505; in soybean soil, immunoassay analysis for detection, 1576
—*P. nicotianae*, on pineapple, spatial pattern analysis using geostatistics, 221
—*P. palmivora*: on cacao, seedling blight from, 1605; mutant strains, resistant to phosphorous acid and fosetyl-Na, 974
—*P. parasitica*: in citrus orchards, population estimates, 940; distribution in citrus orchards in Florida, 1575; growth and reproduction inhibited by aluminum, 1576; on *Lavandula angustifolia*, new host, 1614; oospore germination of, induction, 335; in soil, immunoassay for detection, 1577; species-specific DNA from, cloning, 1550; on tobacco, microorganism composite affecting infection, 1484; on tobacco, root development and infection relation, 1478; on tomato, yield and irrigation factors, 1710
—*P. syringae*, on almond: pruning wound cankers, distribution and development, 468; temperature effect on resistance, lignin and suberin formation in bark, 478
Piazzolla, P., 1600
Picea rubens (see also Spruce), discolored root wood of, decay resistance, respirometric testing, 676
Pierce, C., 1552
Pierce, L. E., 1612
Pierson, L. S., III, 1522
Pike, S., 1589
Pine (see also *Pinus elliotii*)
—Armillaria root rot, growth, description method, 1555
—Finnish, pinewood nematode susceptibility, 1514
—gall rust of, resistance response in half-sib progenies, 484
—injury, possible air pollution effect, 1581
—loblolly: fusiform rust, triadimefon seed treatment and foliar spray, 1606; pine wood nematode distribution, pine sawyer role, 1555
—loblolly and slash, fusiform rust infection, selective cutting effect, 1516
—pitch canker, in California, description, 1520
—pith necrosis and root rot, *Fusarium* cause, stress relation, 1521
—radiata, western gall rust of, inoculation techniques, 1603
—red, Fusarium root rot, ethephon and ectomycorrhizal treatments, 1555
—shortleaf and slash crosses, fusiform rust on, histopathology, 396, (397, 399-401)
—slash, rust of, anatomical response, 1607
—white: blister rust control by pruning, 1533; nursery seedlings, soilborne pathogens, control methods, 1532; SNB

symptomatic response to ozone, 1511
Pineapple
—corking and core rot, sources of variation, 1606
—heart rot, *Phytophthora nicotianae* relation, analysis using geostatistics, 221
—leaf spines, hormone effect, 1603
—mealybug wilt, viral RNA in mealybugs associated, 1584
Pinon, J., 1554
Pinto, R. L., 1564
Pinus elliottii (see also Pine), fusiform rust resistance, fungal elicitor effect, 1606
Pirone, T. P., 104, 1361, 1517, 1537, 1601
Pistachio, Verticillium wilt of, wilt resistant rootstocks, 1546
^{32}P-labeled probes, 1425
Plantain, black sigatoka of, spray deposition of mistblower, modification, 1531
Plasmids, pCSl, in *Clavibacter michiganense*, characterization, 1381
Plasmopara spp.
—*P. halstedii*, races of, aggressiveness variation, 1610
—*P. lactucae-radicis*, on lettuce, pathology, 1598
—*P. viticola*, on grape: infection efficiency model, temperature and leaf wetness factor, 794; sporulation, quantitative model, 1316
Ploetz, R. C., 1544
Plum, black spot, differential virulence on stone fruits, 1312
Plum pox virus, detection by dot hybridization, RNA probe, 1280
Plumley, K. A., 1510, 1516
Polston, J. E., 1536
Polymyxa spp.
—*P. betae*, isolates of, vectoring ability and aggressiveness, 1340
—*P. graminis*, on wheat roots, virus vector, 198
Pond, E., 1576
Ponz, F., 1124, 1558
Pooranampillai, C. D., 863
Pope, D. D., 1529
Popenuck, T. L., 1555
Poplar, Cytospora and Septoria cankers and borers, site factors, 1554
Poplawsky, A. R., 426
Porter, D. M., 672
Porter, K. B., 1513
Porterfield, M. R., 1586
Porto, M. D. M., 345
Postharvest pathology
—apple diseases, biocontrol, 194
—apple fruit rot, biocontrol with *Debaryomyces hansenii*, 1592
—*Aspergillus niger* and *Botrytis cinerea* on grapes, immunodetection, 1516
—wood degradation, immunological characterization, 1508
Postia placenta
—carbohydrate-degrading enzymes of, tunicamycin effect, 862
—hydrogen peroxide formation by, in media, 1590
Postman, J. D., 1606
Potato
—arachidonic acid in tubers, gene alterations, 1591
—cultivars resistant to Verticillium wilt, *in vitro* selection, 1610
—cyst nematode, pathotype polypeptide maps, genetic variation, 894
—early and late blight of, simulation models, low risk strategy, 1539
—early blight: effect in Florida, 1577; fungicide spray schedules, 860; models for disease progress and other factors, 1503
—early dying disease, soil type effect and yield reduction, 159
—*Erwinia* inoculation, technique, 1615
—fungal and bacterial pathogens of, in Costa Rica, 856
—late blight: epidemics, metalaxyl application, model, 559; pathosystem stability, 1615; resistance, cytological comparison, 350, (354, 355); resistance, evaluation assay, 1530
—leafroll disease, serological testing, monoclonal antibody specific for viruses, 1583
—metalaxyl: accumulation in tubers, moisture factors, 864; application to foliage, distribution and temporal dynamics, 555
—*Phytophthora infestans* on: hypersensitivity, phosphatase activity, 1556; metalaxyl-resistant, cymoxanil mixture synergism, 636
—protoplast-derived clones, soft rot resistance, in field, 1595
—rhizobacterial colonization, inoculum delivery system, 534
—Rhizoctonia disease complex, seed treatments, 1532
—scab, etiology in Wisconsin, 1509
—seed treatment and tuber-borne inoculum, 1578
—stem rot, infection by *Erwinia* in irrigation water, 1668
—*Verticillium dahliae* on leaves, yield loss, modeling influences infection rate and temperature, 1198
—Verticillium wilt of, gas exchange chronology, 1563
—virus elimination by heat and ribavirin, 1616
—viruses in Pennsylvania, 863
—yield loss from *Verticillium*, temperature and infection rate effect, modeling, 1529
—yield reduction from mildew and nematode, environmental variables, 1539
Potato leaf roll virus
—complementary DNA of, molecular cloning, 1060
—dot-blot hybridization for detection, 1548
—on *Lycopersicon peruvianum*, light quality effect on translocation, 1160
—spread in field, 1548
—titer in aphid and host, transmission relation, 1548
—on tomato, extreme resistance, 1164
Potato spindle tuber viroid
—on tomato: cross-protection, 1331, (1333); protein synthesis, and binding of viroids, 575
—strain detection on seed by electrophoresis, 663
Potato virus S, genomic RNA of, complementary DNA cloning, 1560
Potato virus X
—potato leafroll virus, magnetic microsphere ELISA for detection of both, 1536
—specific monoclonal antibodies for, hybridoma cell lines, 1585
Potato virus Y, RNA, molecular cloning of cDNA, 1601
Potyviruses
—gene product detection, in protoplasts and intact tissue, 1531
—tobacco resistant to, nature of, 1537
Pouleur, S., 1510
Powell, C. A., 1520, 1569, 1594, 1601
Powell, N. L., 672
Powell, R. L., 1545, 1572
Powelson, M. L., 1668
Powers, H. R., Jr., 484
Powers, K. A., 1553
Powers, T. O., 1136
Prager, C. M., 1516
Pratt, D., 1641
Pratt, P., 625
Pratt, R. G., 629, 1580
Pratylenchus penetrans, on potato, early dying, soil type effect, and yield reduction, 159
Price, T. V., 1571, 1615
Prince, T. A., 682
Prior, B. A., 213
Probes, ^{32}P-iabeled, 1425
Proffer, T. J., 256
Protoplast fusion, interspecific, resistance source of potato to soft rot, 1216
Provvidenti, R., 1568
Prune, russet scab of fruits, chemical control, nonwaxy area correlation, 1531
Prune dwarf virus, in buds and leaves of peach and prune, ELISA detection, 1597
Prunier, J.-P., 1540
Prunus necrotic ringspot virus
—in buds and leaves of peach and prune, ELISA detection, 1597
—electrophoretic variation in, 1605
Prusky, D., 1557
Pseudocercosporella herpotrichoides
—cultural instability of, 1611
—on wheat, resistance inheritance, 1542
Pseudo-curly top virus, on tomato, serological detection using ELISA, 1597
Pseudomonas spp.: fluorescent, quantification using ELISA, 626; in soil, phenazine antibiotics produced by, detection, 1522; on soybean roots, colonization factors, 1055
—*P. aureofaciens*: peptidase activity, *lac*ZY gene modifies, 1503; take-all suppressed by, phenazine antibiotic role, 1522
—*P. cepacia*, on apple and pear, biocontrol, 1697, (1699)
—*P. corrugata*: phytoalexin biosynthesis from, multicomponent elicitor, 1523; phytotoxin production by, role in tomato pith necrosis, 1536
—*P. fluorescens*: antibiotic biosynthesis characterization, 1535; Fusaromycin A from, biosynthesis genes, 1587; oomycin from, cloning of additional genes, 1535; osmoresponsive genes in, calcium and proline role, 1609; for *Pythium* control, fluorescent siderophore role, 166; for rhizobacterial colonization, delivery system for, 534; take-all suppressed by, 1094; take-all suppressed by, genetics of antibiosis, 426
—*P. gladioli*, inhibitory to *Botrytis cinerea*, mode of action, 1509
—*P. putida*: biocontrol agent for Fusarium wilt of cucumber, 190; root colonized by, resistance to oxygen, 1591
—*P. solanacearum*: Fusarium wilt of tomato controlled by, fusaric-acid detoxification, 1307, (1310); on potato, hypersensitivity, tissue culture for molecular analysis, 1610; restriction fragment length polymorphisms for classification, 1501; in soil, survival, 628
—*P. syringae*: in apple, streptomycin resistance in, conjugative plasmid association, 410; *atropurpurea, clycinea*, and *tomato* pathovars, coronatine-producing strains, 1527; on bean, weed source, 1565; on bean leaves, bactericide efficacy for, 1530; on bean seed, eradication, 1515; chemotaxis, 1551; copper resistance operon, transcriptional regulation, 1569; copper resistance, toxicity of free copper ions, 1608; on

cucumber buds and leaves, survival, and humidity effect, 179; cupric hydroxide deposits on leaves, chemical form and bactericidal activity, 1608; *Cytospora cincta* competition, pH involvement, 619; ice nucleation active strains, on leaf surfaces, antagonism, 444; on maple and pear trees, grasses, population dynamics, 1366; mutants of, exogenous methionine incorporation into protein, 1569; mutants of, transposon Tn*5* generated, 1589; on oats, ice-nucleation-active, genotype relation, 952; pathovar attachment to leaves, 1565; on pea, races 1, 2, and 3, host response, 1451; pv. *tomato*, differentiation from pv. *syringae*, with DNA hybridization probe, 1186; pathovars *tomato* and *glycinea*, avirulence gene D comparison, 1535; pathovars of, genetic relations, restriction fragment length polymorphism, 1543; populations in field, intraspecific shifts, 1551; pseudomicin from, broad range antimycotic, 1528; recombinant ice strains, frost injury control, 1552; on soybean, coronatine toxin detection in, ELISA use, 1498; on strawberry, INA+ and INA− interactions, restriction fragment fingerprint analysis, 1552; syringomycin production, expression of *syrB* gene, 1534; syringomycin production, *syrA* gene analysis, 1535; tabtoxin production, DNA sequence, molecular analysis, 1569; Tn*5* insertion mutations, generation, 1610; in tobacco, calcium role in K+/H+ exchange, 1591; in tobacco cell suspensions, active oxygen induction, 1528; on tomato, control with copper bactericide and copper-resistant bacterial strain, 601; virulence loss in, deletion of *iaa* operon, 1556

—*P. viridiflava*, extrachromosomal elements, 1552

Pseudoperonospora humuli, on hop, spatial pattern in yards, 1389

Puccinia spp.

—*P. asparagi*, on asparagus, occurrence and control in desert, 1532

—*P. carduorum*, musk thistle controlled by, field evaluation, 1593

—*P. coronata*: on oats, resistance gene deployment effect, models, 1087: race 276 dominance, factors affecting on oats in Israel, 135

—*P. graminis*: growth, cell membrane permeability, and ultrastructure, sterol inhibitor effect, 1033, (1035, 1037-1040); on wheat, international system of nomenclature, 526, (527); on wheat, resistance gene deployment effect, model, 1087; teliospore germination, heat shock induction, 1582

—*P. hordei*, on barley, resistance sources, land race cultivars, 905

—*P. polysora*, on corn, epidemics in Pennsylvania and Maryland, 579

—*P. punctiformis*, teliospores: germination, stimulated by soil extracts, 1593; nicotine effects, 861

—*P. recondita*: population fluctuations, analysis, 1614; on wheat, avirulent on thatcher, 1596; on wheat, gene action for resistance, quantitative, 451; on wheat, heritability and gene numbers for resistance, 457; on wheat, virulence and race dynamics in Canada, 1542

—*P. sorghi*, on sweet corn: hybrid reaction, and yield loss, 172; incidence and severity relation in susceptible and resistant hybrid, 1155; resistance related to spatial and temporal development, 227

—*P. striiformis*: North American races, resistance inheritance, 1542; on wheat, focus expansion model, 919; on winter wheat, severity prediction, using meteorological data, 543

Pueppke, S. G., 507

Punja, Z. K., 1578

Purcell, A. H., 1541

Purcifull, D. E., 1128, 1266, 1537

Pusey, P. L., 1572, 1605

Putnam, M. L., 1563, 1614

Pyrenochaeta terrestris, on onion, resistance, assays, 115

Pyrenophora spp.

—*P. avenae*, on oats, rate-limiting resistance, 957

—*P. teres*: on barley, yield and weed effects, 295; sexual stage, in California barley field, 1612

—*P. tritici-repentis*: on alternative hosts, aggressiveness, 1526; ascocarp formation, suppression by *Limonomyces roseipellis*, 1254, (1257); biocontrol, indicators in straw-colonizing fungi, 1594; phytotoxin production in isolates, 1526; primary inoculum and disease progress curve, 1614; saprophytic growth and pseudothecial production, water potential influence, 1205; suppression by glyphosate herbicide, 1611; toxin from, purification, 1590; virulence and aggressiveness in populations, New York, 1526; on wheat, toxin isolation and characterization, 1527

Pyricularia oryzae

—cell death from, heat-labile molecules, 1590

—on rice, forecasting system, computerized, field tests, 931

Pythium spp.: damping-off by, biocontrol with *Enterobacter cloacae*, 1075; mycelial protein electrophoresis for comparison, 1520; in plant tissue, immunoassay format for detection in fields, 1516; on sugarcane stubble, decline association, 1688, (1690, 1691), 1692; suppression, siderophore role, effect of fluorescent pseudomonads, 778; on wheat roots, quantification of infection, most probable number method, 1616

—*P. aphanidermatum*: on bentgrass, salinity stress effect, 1521; on creeping bentgrass, salinity stress effect, 1495; metalaxyl resistance frequency in overwintering populations, 1510

—*P. ultimum*: biocontrol using *Enterobacter cloacae*, bioluminescence, 1594; biocontrol with *Pseudomonas fluorescens*, fluorescent siderophore role, 166; in container media, activity and biomass, suppressiveness prediction, 1447; *Gliocladium virens* effect on, hydrolytic enzymes, 863; on sugar beet seed, osmopriming effect on exudation and damping-off, 1246; oomycin A expression, temperature and moisture effect, 1558; oospore germination, wall thickness, factors affecting, 435; oospores of, insensitivity to chemicals and heat, 1409, (1410); suppression by microbial activity, 314

Quick, J. S., 1574

Quigley, N. B., 1535

Quimette, D. G., 1563

Quinn, J. A., 1561

Raabe, R. D., 1613

Rabin, D. R., 1554

Raccah, B., 1361

Radice, A. D., 1136

Radish

—ozone and nitrogen effect on growth, assimilate partitioning, 1513

—ozone effect on leaf carbohydrate, 1513

Rae, B. P., 1550

Ragland, C. K., 1553

Rahimian, M. K., 949

Raid, R. N., 579, 1574, 1583

Rajeshwari, R., 310

Raleigh, R. J., 1581

Ram, A., 858

Ramachandra, S., 1559

Ramirez, C., 858

Ramirez-Villapudua, J., 289

Ramos, L. J., 1527

Ramularia tulasnei, overseasoning structure in California, 1572

Rand, R. E., 1596

Randawa, Z., 1585

Rane, K. K., 1568

Rao, M. N., 1556

Rappaport, L., 1556, 1557

Rasmussen, J. B., 1502, 1504

Rasmussen, S. L., 1495, 1521, 1598

Raspberry, ilar-like virus from, RNA cloning and nucleotide sequence, 1560

Ravelonandro, M., 1280

Raymer, P. L., 1579, 1611

Reaves, J. L., 1559, 1592

Rebhuhn, B. J., 1606

Red clover necrotic mosaic virus, genome organization, 1518

Reddick, B. B., 418, 1583

Reddy, D. V. R., 310, 631

Reddy, M. S., 1544

Redlin, S. C., 1608

Reeleder, R. D., 1594

Reeser, P. W., 1540, 1541

Regner, K. M., 1565

Reifschneider, F. J. B., 1463

Reilly, C. C., 1605

Reinhold, M., 905, 1546, 1611

Renfro, B. L., 1612

Resistance

—barley to leaf rust, sources, 905

—corn inbreds to head smut, diallel analysis, 65

—corn to gray leaf spot, inheritance, 790

—cowpea to tobacco ringspot virus and cowpea mosaic virus, 1124, (1126)

—defense mechanisms, sequestered superoxide radicals, 1589

—flax to rust, *L8* gene, 338

—induced against biotrophic fungi, preconditioning temperature conditions, 1592

—lettuce to corky root, genetics, 1145

—loblolly pine to gall rust, half-sib progenies, 484

—muskmelon to powdery mildew race 2, 144

—nuclear structure role, 1009

—oats to Pyrenophora leaf blotch, rate-limiting, 957

—onions to pink root disease, assay methods, 115

—peach to canker, suberin formation relation, 1070

—pearl millet to *Bipolaris setariae*, genetics, 1179

—pepper to bacterial leaf spot, quantitative resistance, 607

—potato to late blight, specific and general resistance comparison, 350

—sugarcane to ratoon stunting disease, 722; population variability, 462

—sweet corn to rust, blight, wilt, and yield reduction, 172

—tomato to tomato yellow top and potato leaf roll viruses, extreme resistance, 1164

—wheat to leaf rust, gene action,

quantitative, 451; heritability and gene numbers, 457
—wheat to wheat streak mosaic virus, low virus titer effect, 703
Reuveni, R., 1545
Reviewers, acknowledgment of, 1
Reynolds, K. L., 1168, 1529
Reynolds, K. M., 240, 246, 822, 1361
Reynolds, S. R., 1604
Rhizobacteria (see also Bacteria)
—identification using three-dimensional models, 1523
—root-knot nematodes affected by, gall formation, 1466, (1468)
Rhizoctonia spp.: anastomosis groups in, genetic relatedness, DNA/DNA hybridization measurement, 698; binucleate, on wild strawberry, pathogenicity studies, 1507; on centipede grass and St. Augustinegrass, pathogenicity, 628; immunoassay format for field detection, 1516; on strawberry, anastomosis groups and binucleate species, identification and pathogenicity, 379; on turfgrass, in New Jersey, 1510
—*R. solani*: AG-2 and AG-4, antagonism to *Rhizoctonia* and other basidiomycetes, 629; AG-3 group, estimation in soil, 1287; anastomosis and nuclear condition of, clean slide technique for observation, 820; anastomosis groups of, ribosomal RNA genes, 1588; biocontrol by novel fungi, 862; dsRNA, genetic relatedness, 1589; in hardwood bark media, organic matter and cellulose amendment effect, 836, *1512*; inoculum density-disease incidence, soil effect, 127; *Mycophagous collembola* feeding, biocontrol relation, 1522; on ornamentals in New Jersey, characterization, 1506; on peanut, isolate heterogeneity, 1580; *Rhizobium* strains inhibitory to, potential, 1544; on soybean, AG2-II isolates, 1503; on soybean roots, *Fusarium oxysporum* interaction, 771; from strawberry to asparagus, pathogenicity, 1507; on sugar beet, pectin lyase from cultures and root extract, 1590
—*R. zeae*, *Acremonium coenophialum* not effective to growth, 1524
Rhizosphere
—bacterial colonization of, sand as delivery method, 1557
—pseudomonad and mycorrhizal fungi interaction, 1567
—width estimate, soil compression effect, Ferriss equation, 253
Rhoads, R. E., 1518
Rhododendron
—fungicide smoke deposition, electron beam analysis, 1594
—Phytophthora root rot, pine bark medium effect, 1569
Rhopalosiphum padi, barley yellow dwarf virus
—transmission affected by vector, 811
—vector, 766; transmission neutralized by monoclonal antibody, 1302
Rhynchosporium secalis
—on barley, chemical control, 1509
—population structure, ribosomal DNA genetics, 1529
Ribonucleic acid, ribonucleases, enzymatic function, virus transmission and beetle feeding, 270
Rice
—blast: analysis of growth and yield from, 1526, computerized forecasting system, field tests, 931; genetic analysis of virulence in pathogen, 1227, (1230)
—*Rhizoctonia solani* on, fungicide application to first and second crop, 627
—sheath blight of, nitrogen effect, 1612
Rice, D., 1599, 1602
Richey, M. G., 1615
Richardson, J., 1473
Ricker, M. D., 1570
Ricker, R. W., 1516
Riedel, R. M., 159, 1539, 1570
Ries, S. M., 1551
Riley, K. L., 1532
Risius, M. L., 1506
Ristaino, J. B., 1701
Ritch, D. L., 864, 1511
Ritchie, D. F., 619
Rittenburg, J. H., 1516, 1576
Rittenburg, J. R., 1516
Rivera, G., 856
Rivera, J. M., 1531
Riviere, C. J., 1601
Rizvi, S. S. A., 1546, 1561, 1596
Robbs, S. L., 1609
Roberts, D. P., 863, 1594
Roberts, J. J., 629
Roberts, P. E., 629
Roberts, S., 1498
Robertson, H. D., 1560
Rochon, D. M., 1601, 1618
Rochow, W. F., 1302, 1326
Rodriguez, E., 857
Roelfs, A. P., 526, 1582, 1595, 1596, 1604, 1614
Rohrbach, K. G., 221, 1606
Roitman, J., 1697
Rojas, M. R., 858
Roncadori, R. W., 1567
Rosa-Marquez, E., 1542, 1603
Rose
—powdery mildew, model using leaf wetness sensors, 1520
—rosette, mite vector, 861
Roseman, T. S., 1502, 1504
Ross, R., 1561
Rotem, J., 135
Roth, D. A., 1517
Rothrock, C. S., 266, 1526
Rouse, D. I., 1563, 1570
Rowe, R. C., 159, 1519, 1539
Rowhani, A., 817, 1124, 1547, 1558
Roy, B. P., 1425
Roy, K. W., 1514, 1615
Royer, M. H., 728, 1276
Royse, D. J., 1507
Rubin, G., 1571
Ruby, C. L., 1595
Ruissen, M. A., 800
Runion, G. B., 1606
Rupe, J. C., 1531, 1545, 1563, 1616
Rupp, R. A., 1609
Ruppel, E. G., 1563
Rush, C. M., 1513, 1544, 1562, 1566
Rush, M. C., 931, 1520
Rushing, A. E., 1104
Russell, M. L., 1124
Russell, T. S., 880
Russin, J. S., 306
Russo, L. W., 625, 1602
Russo, V. M., 1591

Saettler, A. W., 1515
Sagasta, E. M., 888
Saha, D. C., 237
St. Augustinegrass, disease and weed incidence relation to clipping management, 626
Salas, B., 1598
Saleh, N., 631
Salinas, A., 859
Salomon, R., 809
Salt, S. D., 733
Samoucha, Y., 636
Sams, C. E., 1052, 1582
Samson, R. G., 570
Sancho, H., 859
Sandall, L. J., 1136
Sanders, P. L., 1510
Sandler, H. A., 940, 1575
Sandlin, C. M., 1521
Sands, D. C., 1546, 1549
Santos, V. M., 1605
Sapra, V. T., 1563
Sargent, S. A., 1553
Sauer, D. B., 1553
Sayre, R. M., 862, 1523
Schaad, N. W., 95, 121, 272, 872, 1519, 1558, 1565
Schafer, J. F., 1614
Schaffer, B., 1544
Schardl, C. L., 1556, 1615
Scharen, A. L., 762, 1611
Schaup, H. W., 1237
Scheets, K. M., 1517
Schefflera, Alternaria leaf spot, nitrogen effects, 1520
Schenck, N. C., 1604
Scher, F. M., 1055
Schilder, A. M. C., 1526
Schiller Smith, S., 511
Schmitthenner, A. F., 314, 1516, 1522, 1543, 1576
Schnathorst, W. C., 1546
Schneider, B. J., 1609
Schneider, H., 687
Schneider, R. W., 1520, 1543, 1688, 1692
Schoelz, J. E., 1517, 1600
Scholthof, H. B., 1517
Schönbeck, F., 1592
Schots, A., 300
Schott, M. R., 1581
Schreiber, L. R., 1610, 1618
Schroth, M. N., 534, 1246, 1466, 1523, 1545
Schubert, K., 1528
Schuh, W., 432, 1616
Schultz, T., 1546
Schwartz, H. F., 1530
Schwenk, F. W., 1583
Sclerotinia spp.: DNA of, restriction fragment length polymorphisms in, 1047, *1512*; immunoassay format for field detection, 1516; on legume cover crops, in Southeastern USA, 629
—*S. borealis*: dicarboximide resistance in isolates of, 863; extracellular enzymes produced by, purification, 1589; on peanut, early infection stages, 629; on peanut, environmental factors, 672; sclerotial production and viability, in peanut field, 625
—*S. sclerotiorum*: sclerotial germination inhibited by chitinase, 1594; sclerotial production in, in vitro techniques, 1470; on soybean, epidemiology in Ontario, 1241; uninucleate protoplasts of, genetic manipulation, 1549
Sclerotium spp.
—*S. cepivorum*, survival after seed treatment, 1574
—*S. rolfsii*: on carrot, epidemic factors, 595; on iris and lilies, fungicides for, 1532; *Serratia marcescens* for biocontrol, chitinase role, 84, (86, 87)
Scott, G. E., 1515
Scott, H. A., 270, 1584
Scott, J. W., 1552
Scott, S. W., 1568
Scytalidium lignicola, antagonism to wood decay fungi, 1606
Seabrook, J. E. A., 663
Seck, M., 295
Secor, G. A., 1101, 1381, 1595
Seedborne pathogens, inoculum thresholds

—bacteria, 872
—fungi, 868
—overview, 867
—seed health testing, sampling and statistics, 880, *1260*
—symposium, 867
—viruses, 875
Seem, R. C., 1529, 1571
Sehgal, O. P., 1537
Seifers, D. L., 208, 703, 1584
Seip, E. R., 1549
Seipel, M., 861
Seiridium unicorne, on juniper and *Thuja*, in Kansas, 1607
Septoria spp.
—*S. apiicola*, toxin isolation from, 1557
—*S. glycines*, host specific pathotoxin from, purification, 1504
—*S. nodorum*: phytotoxic components from, characterization, 1545; on wheat, simulation model, implementation, 1539; on wheat, sporulation patterns on leaves, resistance, 628
—*S. tritici*: population fluctuations, analysis, 1614; on wheat, host-pathogen relations, 762
Sequeira, L., 996, 1501, 1565, 1610
Serratia spp., on soybean roots, colonization factors, 1055
—*S. marcescens*, biocontrol of *Sclerotium rolfsii*, chitinase role, 84, (86, 87)
Sesame, virus-like disease of, graft-transmissible, inclusion body, 1586
Shaber, S. H., 1561
Shafer, S. R., 1513
Shaheen, F., 1570
Shaik, M., 1566
Shain, L., 841, 1193, 1261, 1533
Shane, W. W., 1521, 1612
Shaner, G., 630
Sharma, U., 1611
Sharp, E. L., 905
Shaw, C. G., III, 971, 1606
Shaw, D. A., 1539, 1616
Shaw, J., 1518
Shaw, J. J., 981
Shaw, M. E., 1548
Shelby, R. A., 1564, 1597
Sheng, W. S., 1513
Shepherd, R. J., 1517, 1600
Sherwood, J. L., 1503, 1547, 1586, 1612
Sherwood, R. T., 1523
Shew, B. B., 493, 1596
Shew, H. D., 1576, 1577
Shiel, P. J., 1510
Shirako, Y., 1536
Shirane, N., 1627
Shishkoff, N., 1578
Shoemaker, P. B., 1532, 1565, 1582
Shotwell, O. L., 68
Shtienberg, D., 1539
Shukla, D. D., 1587
Siderophore, suppression of *Pythium* spp. role, wheat growth responses, 778
Sigulas, K. M., 149
Sillick, J. M., 863
Simon, A. E., 1508
Sinclair, J. B., 771, 1503, 1504, 1523, 1592, 1618
Sinclair, W., 1555
Sinclair, W. A., 1524, 1554
Sinden, S. L., 1530
Singh, R. P., 663, 1331
Singleton, C., 1055
Singleton, L. L., 1598, 1616
Sippell, D. W., 1511
Sisler, H. D., 860
Sit, T. L., 1425
Siu, N., 1517
Sivan, A., 1549
Sjoerdsma, J. D., 1519, 1576
Skelly, J. M., 1507, 1509, 1511
Skilling, D. D., 1608
Skinner, D. Z., 1550
Skipper, H., 1544
Skoglund, L. G., 1539
Skopp, R. N., 1560
Skroch, C. H., 1615
Slack, S., 1509, 1548, 1567, 1616
Smerage, G. H., 1598
Smilanick, J. L., 1553, 1617
Smith, B. J., 629
Smith, D. A., 1615
Smith, D. M., 1583
Smith, E. F., 1615
Smith, F. D., 863, 1511
Smith, G. C., 1509
Smith, G. S., 371, 1577
Smith, K. L., 864
Smith, K. P., 1570
Smith, O. D., 625
Smith, O. P., 1060, 1548
Smith, R., 1531
Smith, S. E., 253
Smith, S. S., 1511, 1536
Smith, V. L., 595, 1511, 1523
Snow, J. P., 630, 1525, 1538, 1594, 1614, 1615
Snyder, B. A., 1588
Snyder, K. R., 1511
Soby, S. D., 1556
Soika, M. D., 1510
Soilborne wheat mosaic virus
—in barley protoplasts, replication, 1560
—purification by immunoaffinity chromatography, 860
Solanum spp., somatic hybrids, resistance source to *Erwinia* soft rot, 1216, (1217)
Solarization, cruciferous residues and cabbage yellows, 289
Somerville, S. C., 1590
Sommerfeld, M. L., 1540
Somodi, G. C., 1552
Song, H., 1504
Sonoda, R. M., 221
Sopher, D. S., 1601
Sorghum
—anthracnose, horizontal resistance prediction, disease reaction, 1571
—charcoal rot, in Somalia, 1564
—downy mildew: herbicide antidote, iatrogenic relation, 1574, 1648, (1653-1655); oospore spatial patterns in soil and plants, comparison, 432
—*Gloeocercospora sorghi* and *Colletotrichum graminicola* on, formamide hydro-lyase from, purification, 1527
—head blight, histopathology, 628
—maize dwarf mosaic virus strain-B on, titer variation, 208
—yellow banding, polyhedral virus characterization, in Texas, 627
Sorghum chlorotic spot virus, structural proteins, attachment to potato virus Y inclusions, 1586
Sorghum yellow banding virus, host range in Texas, 627
Sowthistle yellow vein virus, RNA of, specific in hosts, analysis, 1473
Soybean
—brown stem rot of, field screening for resistance, 1579
—charcoal rot, yield loss using soil profiles as microplots, 1583
—cyst nematode: detection using DNA hybridization probe, 1136; sudden death syndrome, 1514
—damage from weather, fungi, 1618
—*Diaporthe*/*Phomopsis* complex, culture filtrate effect, 1503
—downy mildew of, resistance inheritance to races 2 and 33, 1542
—frogeye leafspot of, multi-race resistance, 1546
—*Fusarium oxysporum* and new virus-like disease association, 1579
—moisture variability in, 1617
—mold damage, fungi and mycotoxins in Illinois, 1618
—Phytophthora root rot, host resistance and pathogen aggressiveness, 1576
—*Phytophthora megasperma* on: isoflavanoid conjugates in, 1555; tolerance to using zoospores, 1580
—pod and stem blight, fungicides, 1594
—*Pseudomonas* and *Serratia* spp. in roots, colonization factors, 1055
—Rhizoctonia aerial blight: 630; moisture and growth stage effect, 1538
—root rot, *Fusarium* and *Rhizoctonia* interaction, 771
—rust of, isozyme comparison in two hemispheres, 1491
—sclerotia and Rhizoctonia foliar blight occurrence, in Louisiana, 630
—Sclerotinia stem rot, epidemiology in Ontario, 1241
—seed microorganisms, stink bug feeding effect, 306
—somatic embryo regenerant lines, *Phytophthora* disease reaction, 1543
—stem canker: cultivar, tillage, and cropping system effects, 266; time of invasion on symptoms, 1579
—stem canker and agronomic performance, planting date effect, 1563
—storage fungi, dry matter losses caused by, 1553
—sudden death syndrome: cultivar, *Fusarium*, and nematode relation, 1545; *Fusarium solani* role, 1563
—tobacco streak virus in, temperature and light effect, 1524
—virus-like disease of, unknown, 864
—viruses, distribution in Tennessee, 1583
Soybean mosaic virus
—gene mapping and expression, 1587
—natural resistance, incorrect capsid protein processing, 1586
—propagation in soybean callus culture, 1585
Spaine, P. C., 1607
Sparks, R. B., 1381
Spear, R., 1504
Sphacelotheca reiliana, on corn, diallel analysis of resistance, 65
Sphaeropsis sapinea, in forest tree nurseries, inoculum sources, 831
Sphaerotheca fuliginea
—on cucurbits, control with oil from Australia tea tree, 1595
—inoculation, vacuum-operated settling tower for, 1463
—on muskmelon, race 2, epifluorescence microscopy of genotypes, 144, (146, 147)
Spiegel, F. W., 1519
Spielman, L. J., 1511, 1543
Spinach, downy mildew of, focus expansion model, 919
Spinski, P. L., 1615
Spiroplasma spp., glycolysis and Krebs cycle, enzyme association, 1602
—*S. citri*: monoclonal antibodies generated to, cross-reactivity, 1588; Spiroplasma-virus on, electroporation for transfection, 1602; surface proteins, antisera specific for, 1540
Spotts, R. A., 1553
Spruce (see also *Picea rubens*)

—black, containerized seedlings, ethephon and ectomycorrhizae effects on root growth, 1608
—red: crown analysis at high elevations in New York, 1510; crown and root relations, declining stands, 1511; decline, carbohydrate and nitrogen content of roots, 1533; health related to soil properties, in Massachusetts, 1509; ozone and acid rain effect, 1581; root vitality and mycorrhizae, health classes, 1533
Spurr, H. W., Jr., 864
Stace-Smith, R., 875
Stack, R. W., 1598, 1608
Stahl, S., 1575
Staley, J. M., 1532, 1613
Stall, R. E., 607, 1551
Stanghellini, M. E., 820, 1495, 1521, 1576, 1598
Stanosz, G. R., 1554
Stapleton, J. J., 440, 1531
Stark, D. M., 1561
Staskawicz, B. J., 1524
Stasny, T. A., 861
Stasz, T. E., 1409, 1549
Statistics, geostatistical techniques, spatial pattern analysis of pathogens and disease, 221
Statler, G. D., 1543
Staub, T., 1033
Stavely, J. R., 864, 1603
Steadman, J. R., 1566, 1603, 1604
Steffenson, B. J., 1538, 1612
Steiner, P. W., 1571
Steiner, U., 1592
Stemphylium spp.
—*S. botryosum*, on alfalfa, fungicide evaluation for, 934
—*S. vesicarium*, on asparagus, fungicide evaluation, 1594
Stenger, D. C., 154, 1473
Stephens, C. T., 682, 1565
Stermer, B. A., 1591
Sterol inhibitors, effect on growth, cell membrane permeability, and ultrastructure of *Puccinia graminis* and *Monilinia fructicola*, 1033, (1035, 1037-1040)
Stevenson, R. E., 579, 926
Stevenson, W. R., 1597
Steward-Clark, E., 1542
Stewart, J., 1613
Stienstra, W. C., 1545
Stier, J. C., 1612
Stigmina carpophila, on almond, ultrastructural study, 1519
Stiles, C. M., 1593
Stipanovic, R. D., 1075, 1557
Stipes, R. J., 861, 863
Stites, J., 1569
Stock, J. D., 1551
Stolle, K., 1193
Strausbaugh, C. A., 1542, 1616
Strauss, J. A., 728
Strawberry
—black root rot complex, *Rhizoctonia* spp., AG and binucleate, 379
—blight diseases of, temperature effect on symptoms, 627
—*Colletotrichum acutatum* on, temperature and wetness duration effect, 1571
—leather rot of: epidemics and weather variables, 822; spatio-temporal analysis of epidemic, 246
—mutants from, INA-minus deletion, field evaluation, 1592
—postharvest fungal pathogens, CO_2 and temperature effect, 1553
—red stele of, immunoenzymatic detection, 1022
—root fungal microflora, root growth, and yield, preplant soil treatment, 1545
Strawberry crinkle virus, detection using lectin probes, 1601
Strawberry vein banding virus, DNA detection, molecular cloning, 154
Streptomyces spp.: melanoid pigments from, potato cultivar effect, 1543; on potato, inhibitory reactions and vegetative compatibility, 1579
Strobel, G., 1528, 1591
Strobel, N. E., 1524
Stromberg, E. L., 863
Strother, M., 1576
Stryker, C., 1550
Stuteville, D. L., 1617
Stutz, J. C., 1610
Stylosanthes capitata, anthracnose of, variability in Brazil, 131
Subba Rao, K. V., 1525, 1615
Sugar, D., 1553
Sugar beet
—*Corynebacterium sepedonicum* on seeds of, recovery, 205
—cultivar reaction to *Pythium*, 1566
—damping-off, osmopriming of seed, exudation, 1246
—*Fusarium* spp. associated with, 1563
—powdery mildew, immunity in European accessions, 1528
—rhizomania of, virus complex association, 1583
—rhizosphere, bacteria in, distribution and generation time, 1576
—root rots of, soil fumigation for, 1562
—seed and seedling pathogens of, growth chamber evaluation, 1515
Sugarcane
—ratoon stunting disease of: diagnostic symptom of autofluorescence, 233, (234); population variability in resistant cultivars, 462; vascular tissue colonization by different cultivars, 722; yield loss, and planting rate, 1530
—smut, spread and increase in Louisiana, 1371
—stubble decline, role of *Pythium*, 1688, (1690-1691), 1692
Sugawara, F., 1591
Summers, M. D., 1060
Sumner, D. R., 629, 1561, 1577
Sun, J., 629
Sunflower, downy mildew, new race in North America, 1580
Suparyono, 172, 1581
Suppressive soils, *Rhizoctonia solani*, inoculum density-disease incidence relation, 127
Surgeoner, R., 1585
Surve, R., 1518
Suslow, K. G., 1541
Suslow, T., 1552, 1556, 1558, 1592, 1610
Sutherland, J. R., 1514
Sutton, T. B., 100, 625, 1004, 1573
Svircev, A. M., 322
Swallow, C. W., 1583
Swanson, S. P., 1618
Sward, R. J., 766
Swarup, S., 1588
Sweet clover necrotic mosaic virus, new serotype, 1343, (1345)
Sweet potato
—java black rot of, inoculum source and infection court, 1442
—leaf blight of, cultivars and breeding clone evaluation, 1581
Sweet potato feathery mottle virus
—detection using transcribed RNA, 1582
—purification method, 809, (810)
Swier, S. R., 1521
Sykes, L., 1322
Sylvester, E. S., 1473
Sylvia, D. M., 1604
Synchytrium endobioticum, resting spores, detection in Maryland, 1563
Syngonium podophyllum, soil fungicide treatment for, costs, 1532
Szerszen, J. B., 1574, 1591, 1648
Sztejnberg, A., 1545, 1557, 1678

Taber, R. A., 1567
Tachibana, H., 1579
Tainter, F. H., 1554
Tajani, M., 295
Talaromyces flavus
—metabolite produced from, role in biocontrol of *Verticillium*, 488
—talaron antibiotic from, glucose oxidase role, 862
Tamaki, S., 1535
Tammen, J. F., 887
Tang, F. A., 1578
Tavantzis, S. M., 1589
Taylor, A. G., 520
Taylor, J. W., 1534, 1554
Taylor, R. J., 1101, 1595
TeBeest, D. O., 986, 1519
Tedders, W. L., 1605
Tedla, T., 1576
Teng, P. S., 1526, 1570
Tepper, C. S., 1589
Tessier, B. J., 1528
Thal, W. M., 389
Thanatephorus cucumeris, on bean
—cultivar evaluation, 856
—cultivar evaluation, distance and density of inoculum, 858
Therrien, C. D., 728, 864, 1511
Thielaviopsis basicola
—on cotton: cultural practice effect, 1544; infection and colonization, factors, 1662, (1664-1666)
—on rye, covercrop effect, 1544
Thomas, C. E., 630, 1596
Thomas, C. S., 260
Thomas, M. D., 1603
Thomas, M. E., 1510
Thomas, P. E., 1160, 1164
Thomashow, L. S., 1522
Thomison, P. R., 864
Thompson, C. M., 1602
Thompson, D. L., 1376
Thomson, S. V., 1514
Thornbury, D. W., 104, 1537, 1601
Thurston, H. D., 1615
Thyr, B. D., 421
Tidwell, T. E., 1613
Tillage
—soybean stem canker relation, cropping system and cultivar effect, 266
—in wheat, induced, suppression of ascocarp in *Pyrenophora*, 1254, (1257)
Tilletia spp.
—*T. controversa*, on winter wheat, field inoculation method, 1526
—*T. indica*: DNA content of, ultrastructure, 728, (730, 731); isozymes of, inheritance, 1276; teliospore identification by isozymes, 1530; on wheat, histology of infection, 1434, (1435, 1436, 1438-1440); on wheat, host-parasite relations, 75, (77-83); teliospore detection in wheat seed, 861
—*T. tritici*, fungicide seed treatment, in Oklahoma, 1525
Timberlake, W. E., 1550
Timian, R. G., 1584
Timmer, J. W., 940
Timmer, L. W., 1298, 1572, 1575
Tipping, E. M., 1521
Tisserat, N., 1607, 1613

Tissue culture
—disease-resistant poplar and larch, bioassays, 1608
—*Pasteuria penetrans* in, reproduction, *Meloidogyne* and *Agrobacterium* transformed roots, 1284
Tobacco
—black root rot of, inoculum density, host resistance, and soil type relations, 1576
—black shank: microorganism composite affecting infection, 1484; root development and infection relation, 1478
—blue mold: immunization, chitanases, glucanases, and proteins, 1556; protection by stem infection with downy mildew, carbohydrate changes, 733; risk, ridomil, and control in Virginia, 1515
—downy mildew of, leaf colonization and phytoalexin accumulation after immunization, 1193, (1195)
—hypersensitivity, ATPase activity in membranes, 860
—leaf brown spot of, chitinase effect on susceptibility, 1556
—*Peronospora tabacina* and tobacco mosaic virus of, resistance, B-protein pattern, 1527
—root growth, novel oncogenes, 1570
—somaclones, disease resistance, 1546
—virus epidemics of, modeling, 1361
Tobacco mosaic virus
—coat protein gene, replication, movement, and symptomatology, 783, (788)
—double stranded RNA-dependent protein activity, 1517
—in leaf cells, satellite virus mixture, ultrastructure, 1585
—movement protein, characterization, 1528
—on nonsolanaceous hosts, foreign gene expression, 1599
—replicase activity inhibited, photoaffinity labeling, 1517
—site-directed mutagenesis, 1600
Tobacco necrosis virus, in aspen tissue culture plantlets, 1555
Tobacco ringspot virus, on cowpea, resistance genes, 1124
Tobacco vein mottling virus
—helper component protein expression, in tobacco, 1517
—transcripts of, full-length, 1518
Tober, D. A., 1582
Tobi, D. R., 1510, 1511, 1533
Todd, L. R., 1525
Todd, T. C., 1583
Tolentino, D. M., 534
Toler, R. W., 627, 1060, 1564
Tolin, S. A., 860, 1585
Tolla, G. E., 1578
Tomas, A., 1590
Tomasino, S. F., 1540, 1541
Tomato
—bacterial speck, control with bactericide and nonpathogenic bacterial strain, 601
—*Cladosporium* elicitor effect, lipoxygenase and lipid peroxidation, 1556
—corky root, root discoloration and tomato residue study, 1578
—cucumber mosaic virus of, protection using virus-satellite combination, 1559
—early blight of, experimental fungicides for, 1532
—Fusarium crown and root rot, effect of cross protecting *Fusarium* strains, 1558
—Fusarium wilt of: biocontrol with *Pseudomonas solanacearum*, fusaric acid detoxification, 1307, (1310); glycoproteins in cell walls after infection, 1610
—greenhouse, yield and root infection in, fungi affecting, 1508
—Phytophthora root rot, yield effect, irrigation factors, 1701
—pith necrosis: cultural practice effect, 1565; etiology in North Carolina, 1582
—potato spindle tuber viroid in, cross-protection using strains, 1331, (1333)
—powdery mildew of: planting date and triadimefon effect on disease, 512; temperature, humidity, and age effect, 1581
—root diseased and healthy, abscisic acid detection, 1506
—root-knot, feeding sites and apoplastic dye for transport, 1421, (1423)
—viroid-infected, viroid binding to host proteins, 575
Tomato bushy stunt virus
—coat protein gene, 1600
—defective interfering RNAs of, molecular characterization, 1601
—*de novo* generation of RNAs, 1601
—RNA of, temperature induced, 1600
Tomato mosaic virus, in tomato somaclones
—nature of resistance, 1536
—replication, 1511
Tomato ringspot virus
—genome detection by hybridization with cRNA probe, 1601
—radio-labelled probes against, production, 1537
—serological grouping of isolates, diagnosis and cross-protection implication, 278
Tomato spotted wilt virus
—biological strains, identification and separation, 1548
—detection in thrips, using ELISA, 1348
—dot blot detection, use of cDNA probes, 1599
—host range in south Texas, 627
—on peanuts in Alabama, 1564
—RNA, cDNA clones of, 1602
—serology, 1536
—virus-specific hybridoma produced by, immunological tolerance, 1537
Tomato yellow leaf curl virus, isolation, 508, (509, 510)
Tomato yellow top virus
—on *Lycopersicon peruvianum*, light quality effect on translocation, 1160
—on tomato, extreme resistance, 1164
Tomerlin, J. R., 1590
Tooley, P. W., 864
Torrance, L., 1537
Torres, C. Q., 1526
Tosic, M., 1587
Tousignant, M. E., 1600
Touvinen, O. H., 314
Toxins
—cercosporin, lack of production, 1082
—coronatine, from *Pseudomonas syringae*, detection, 1498
Toyoda, H., 1307
Travis, J. W., 1562
Treeful, L. M., 1547
Trevathan, L. E., 1580
Trichoderma spp.: antagonistic to *Armillaria* and *Phellinus* spp., 1559; biocontrol agent, against *Phytophthora cactorum*, 1523; colony interaction among species, temperature effect, 1592; on cucumber or tomato, biocontrol agent, performance improvement factors, 520; genetic exchange, transformation as mechanism, 1549
—*T. harzianum*: *Cochliobolus sativus* sporulation affected by, on wheat leaves, 656; hyphal growth, alginate granules, 1594; protoplasts of, nuclear fusion, 1549
—*T. viride*: extrachromosomal elements, 862; on potato, delivery system, 534
Trichosporium symbioticum, on white fir, wound response association, 1533
Trigo-Stockli, D. M., 1617
Triticale, leaf rust resistance and rye chromosomes, independence, 630
Trollinger, D., 1535
Tsai, J. H., 1517, 1583, 1597
Tsao, P. H., 1557
Tubakia dryina, on red oak, scanning electron microscopy preparation, 1531
Tucker, D. P. H., 1572
Tucker, W. T., 1587
Tulip, *Penicillium* on bulbs of, pathogenicity, fungicide resistance, and ethylene production, 682
Tulip breaking virus, monoclonal antibodies to, epitope specificity, factors, 1337
Tungro virus, on rice, disease dynamics, 1570
Turfgrass
—black layer, cause and control, 1569
—endophytic fungi in, detection method, 237, (238, 239)
—necrotic ring spot of, diagnosis using monoclonal antibodies, 1521
—nematodes parasitic on putting greens, distribution, 1521
—patch disease, ectotrophic fungal comparisons, 1613
—patch, relatedness of fungi in Midwest USA, 1612
—pathogens of, potential bioantagonists, 1593
—Pythium blight: ELISA for detection, 1516; time course of development under controlled environment, 1612
Turner, J. T., 1540, 1541
Turnip crinkle virus
—infection from transcribed inoculum, 1600
—reconstitution, using RNA transcripts, 1602
—replication, host range and involvement, satellite RNAs, 1508
Turnip yellow mosaic virus, on *Arabidopsis thaliana*, 1559
Tuskan, G. A., 1607
Tutt, K., 213
Tuzun, S., 1556
Tyler, L. J., 506, 886, 1387
Typhula spp., serological probe for differentiating species, 1519
—*T. ishikariensis*, sclerotial production in V-8 juice, 1510
Tziang, B.-L., 978

Uchida, J. Y., 1605, 1614
Ueng, P. P., 1560
Uncinula necator
—ascospore viability and pathogenicity, in California, 1572
—cleistothecia, development and survival in New York vineyards, 1413, (1414, 1417-1419)
—conidial production, environment effects, 1573
—on grape: ascospore germination and infection, 1538; control factors in California, 1531
Upper, C. D., 1551, 1570
Urban, L. A., 1586
Uromyces spp.
—*U. appendiculatus*: on bean, leaf surface effect, 864; on bean, oxycarboxin or polyoxin D effect on resistance, 1454, (1455, 1456, 1458-1460); on bean, resistant germplasm, dry bean lines, 1603; cluster analysis, in Nebraska and Colorado isolates, 1604; cluster analysis of isolates in Dominican Republic, 1604; phospho-

glucose isomerase allozymes, genotypic frequency estimate, 1604; on snap bean, epidemic in field with altered rows of resistant and susceptible cultivars, 1210; virulence frequency and diversity, in Dominican Republic and Nebraska, 1604
—*U. vignae*, teliospores, nicotine effects, 861
Ustilago spp.
—*U. avenae*, sterol content in strains, triadimenol resistance, 1511
—*U. hordei*: on barley, nonspecific pathogenicity genes, pathogen fitness, 1529; protoplast release and fusion, 1542
—*U. maydis*: mutants, terbinafine resistance, 860; virus I-4, toxin coded by, molecular properties, 1585
—*U. scitaminea*, on sugarcane, spread and increase in Louisiana, 1371
Utermohlen, J. G., 1599
Utsumi, R., 1307
Uyemoto, J. K., 1573, 1597

Vail, M. E., 1571
Valsangiacomo, C., 1066
Valverde, R. A., 1585
Van Alfen, N. K., 1549, 1599
van Bruggen, A. H. C., 1139, 1544, 1551
van den Bosch, F., 54, 59, 919
van der Hulst, C. T. C., 1337
van der Zwet, T., 864, 1604
VanEtten, H. D., 1527, 1549
Van Ginkel, M., 762
Van Gundy, S. D., 534, 1466
van Raak, M., 695
Van Scoyoc, S. W., 863
Vargas, E., 858
Vargas, J. M., Jr., 1503, 1569
Varveri, C., 1280
Vega, A., 626
Velasco, V., 1574
Venturia spp.
—*V. inaequalis*: on apple, sterol biosynthesis inhibitor fungicides for, 1508; on apple leaves, resistance related to cuticular membranes, 1066, (1067, 1068); on apple leaves and fruits, overwintering in New York, 1573; ascospore production and pseudothecia, comparison of media, 1605; cutinase form, 1557; detection using ELISA, 1506; resistance selection, detached leaf use, 1524
—*V. nashicola*, benzimidazole resistance in, sensitivity to *N*-phenylcarbamates, inheritance, 695
Verdegaal, P., 1531
Verdejo, S., 1284
Verticillium spp.
—*V. albo-atrum*: on alfalfa, dissemination via sclerotia, 1514; pathogenicity and vegetative compatibility, 1017
—*V. dahliae*: on ash, scorch decline symptoms, 1504; biocontrol agent for velvetleaf, 1502; biocontrol with *Talaromyces flavus*, glucose oxidase effect, 488; control, factors affecting, 1577; on cotton, detection using immunoenzymatic staining, 1174, (1177); on cotton, root colonization compared to *V. tricorpus*, 708; defoliating and nondefoliating isolates, terpenoid phytoalexins from cotton, 1557; on potato, early dying from, soil type effect, and yield reduction, 159; on potato, pathotype detection, vegetative compatibility analysis, 1519; on potato foliage, yield loss, modeling influence of infection rate and temperature, 1198
Vesonder, R. F., 1591, 1618
Victory, S., 1525
Vidaver, A. K., 27, 1608, 1610
Vigna unguiculata, beetle-transmitted viruses on, plant resistance, 1584
Vilgalys, R., 698, 1588
Villalon, B., 1547
Vincelli, P. C., 966, 1078, 1578
Vinten-Johansen, C., 1513
Viroid, tertiary structure of, RNA oligomer of, 1560
Viruses (see also Potyviruses)
—bacilliform, dsDNA genome, 1559
—carlavirus, blueberry scorch disease association, 1636, (1638)
—detection in protoplasts, by fluorescent antibody staining, 1510
—geminiviruses, phylogeny of, 1599
—pear, detection and elimination, 1606
—plant capsids, proteolysis, 1560
—potyvirus, aphid transmission: epitope sharing, 1587; epitope specificity, monoclonal antibodies, 1600; virus quantity required, 104
—transmission, ribonuclease enzymatic function relation, beetles associated, 270
Vittum, P. M., 1521
Vivoda, E., 1578
Voegtlin, D. J., 1611
Vogeli, U., 1556
Vogler, D. R., 1555, 1603

Wagner, R. E., 1505, 1576, 1592
Wahl, I., 135
Walker, N. A., 253
Walkinshaw, C. H., 1534, 1607
Wall, G. C., 1605
Walla, J. A., 1607
Wallace, T. P., 1530
Walnut, English, cherry leafroll virus on, pathogenicity and serological comparisons, 817
Walsh, R. C., 1600, 1601
Wang, H. L., 1568
Wang, M., 1536
Wang, P., 1527
Wang, Y. C., 1537
Wargo, P. M., 1510, 1511, 1533
Watermelon
—*Fusarium* resistance, local and systemic, 625
—new bacterial disease, in Mariana Islands, 1605
Watermelon mosaic virus, on muskmelon, resistance related to virus movement in leaves, 1043, (1046)
Waters, C. M., 1139
Watkins, G. M., 635
Watkins, L. H., 1578
Webber, J. F., 1593
Weber, D. J., 115, 1607
Webster, R. K., 1135, 1529, 1538, 1612
Weeden, N. F., 1549
Weeks, J. R., 1564
Wehrhahn, C. F., 1529
Wehrli, S., 1567
Wei, J.-K., 550
Wei, N., 1602
Weingartner, D. P., 1577
Weinhold, A. R., 127, 534, 1466, 1545
Weldekidan, T., 864, 1579
Weller, D. M., 1094, 1522
Wells, A. M., 1609
Wells, H. D., 1179
Wells, J. M., 1589, 1604
Welty, R. E., 1611
Welz, G., 1574
Wen, F., 1587
Wen, Y., 1552
Wenner, N. G., 1512
Wenny, D. L., 1533, 1607
Wessels, D. C. J., 1581
Westcott, S. W., III, 630
Whalen, M. C., 1524
Wheat
—black chaff, frost relation, 95
—*Cephalosporium gramineum*, environmental factors, 1611
—*Cochliobolus sativus* on, aphid effect on lesion development after inoculation, 1574
—common root rot: cultural practice effect, 1598; forage production, relation, 1513
—cultivar mixtures, stripe rust effects, 1570
—disease surveillance program in Morocco, 1545
—disease symptom induction, by *Pythium* toxins, 1598
—double-cropped, take-all affected by soybean and sorghum crops, 1526
—electrical transmission line effect, 1581
—foliar disease simulation, growth model modification, 1539
—foliar diseases: fungicides for, 860; new fungicide for, 1561
—foot rot, seedling test, 1616
—growth response and fluorescent pseudomonads, siderophore role in *Pythium* suppression, 778
—*Helminthosporium* and *Fusarium* root rot, yield effect, 1598
—karnal bunt of: histology of infection, 1434, (1435, 1436, 1438-1440); host-parasite relations, 75, (77-83)
—leaf rust: chloride effect on leaf rust, 1596; cultivar mixture effect on severity, 628; epidemics, factors in Louisiana, 1615; leaf blotch, and tanspot of, control with chloride, 1561
—leaf rust and powdery mildew, acid rain effect, 1580
—leaf rust resistance: characterization of selected responses, 1595; gene action, quantitative determination, 451; heritability, and gene numbers, 457; in South Dakota, 1546
—powdery mildew, yield effect, 1529
—*Pythium irregulare* and soil physical factors affecting growth, 1526
—root-infecting fungi, in Morocco, 1598
—rust: detection using highway system, 629; in flag leaves, physiological processes altered by, 1570; pathogenicity, temperature effect, 1575
—scab, *Fusarium* spp. in grain, pathogenicity, 586
—*Septoria* infection, *Pseudomonas fluorescens* effect on, 1592
—*Septoria tritici* on, host-pathogen relations, 762
—snow mold, system for study, 1616
—stripe rust: durable resistance in F7 populations, environment effect, 1546; focus expansion model, 919; severity prediction, meteorological analysis, 543
—take-all, microelement immobilization predisposition, 1504
—tan spot: chloride in irrigation water effect, 1596; growth room evaluation, 1595
—trichothecenes, in tissue, inhibition by H-leucine, 1673
—viral diseases of, assessment in New York, 1509
—yield relation to defoliation and leaf rust, 1525
Wheat mosaic virus, in wheat germ extracts, cell-free translation products, 1536
Wheat soilborne mosaic virus
—epidemics in Florida, cultivar relation, 1525
—resistance evaluated using ELISA, 1612
Wheat spindle streak mosaic virus, grain quality, plant development, and yield reduction, 198
Wheat streak mosaic virus

—coat protein gene, characterization, 1561
—corn as differential host, 1561
—isolate comparison in wheat cultivars, 1584
—resistance related to low virus titer, 703
—wheat striate mosaic virus and wheat spot mosaic, triple infection, 1536
—on winter wheat, fall and spring infection, 1503
Wheeler, B. E. J., 858
Wheeler, M. H., 1617
White, F. F., 1559, 1570
White, J. C., 1559
White, J. F., Jr., 1510
White, J. L., 570
Whitney, E. D., 1528
Whythe, I. V., 65
Wick, R. L., 1521, 1568
Wicklow, D. T., 68
Wicks, Z. W., III, 1579
Wieczorek, A., 1583
Wiedemann, G. J., 986
Wierdsma, L. M., 1530
Wiese, M. V., 1287
Wietor-Orlandi, E., 860
Wijetunga, C., 1540
Wilcox, W. F., 410, 1402, 1511, 1523
Wilcoxson, R. D., 586, 1547
Wild rice, fungal brown spot
—propiconazol rate comparison, 1595
—resistance, evaluation method, 1616
—severity and yield, fungicide effect, 1595
Wilde, J. R., 1509
Wiley, G. L., 1502
Wilkinson, H. T., 1505, 1576, 1612, 1613
Williams, B. L., 1571
Williams, E., Jr., 1525
Williams, J. H., 659
Williams, N. D., 1575
Willis, D. K., 1569
Willis, J. W., 1498
Wilson, C., 1592
Wilson, D. M., 1618
Wilson, G. T., 1567
Wilson, J., 630
Wilson, L. L., 1571
Wilson, L. N., 1562
Wilson, W. J., 1561
Windels, C. E., 107, 586
Wisniewski, M., 1592
Witcher, W., 1015
Woloshuk, C. P., 1549
Wong, R. S.-C., 1511
Wongkaew, S., 631
Woodhead, S. H., 1593, 1595
Worf, G. L., 1504, 1613
Workneh, F., 1563
Worrall, J. J., 676
Wu, F. C., 1517
Wu, H.-I., 1470
Wu, J.-L., 978
Wu, Y., 1599
Wuest, P. J., 1617
Wyllie, T. D., 1563, 1577
Wynne, J. C., 493

Xanthium spinosum, anthracnose, environmental factor effect, 1182
Xanthomonas campestris
—on apricot, peach, and plum, differential virulence, 1312
—on barley, strain membrane proteins, serology, 272
—on bean seed, eradication, 1515
—on citrus, Asiatic canker, spatial and temporal spread in Argentina, 739
—from citrus bacterial spot, in Florida, 1551
—copper-resistant plasmid in: characterization, 1587; detection and host range, 625
—on cotton, single vs. mixed inoculum of isolates, 1530
—on crucifers, inoculation technique, 981, (983, 984)
—ethylene evolution in, culture conditions, 1551
—genomic DNA analysis, 1587
—on geranium: detection using immunoassay and culture indexing, 1568; serodiagnostic assay, polyclonal antibody-based, 1520
—IAA in filtrates of, cytokinin-like activity, 1610

Zucchini yellow mosaic virus
—biological and serological properties, 1568
—cloning, 1599
Zuidema, D., 1601
Zummo, N., 1515
Zygophiala jamaicensis
—on apple fruit, pruning effect, 1004
—growth and sporulation, temperature and humidity effects, 100
—ice nucleation active, *inaX* genes from, 1527
—on kidney bean, hydrogen fluoride effect on growth, blight, and fluoride accumulation, 1168
—molecular analysis of gene from, in bean, 1524
—pathogenicity and avirulence gene expression, promoter-probe plasmid, 1588
—on pepper, quantitative resistance, 607
—on rice, avirulence gene isolation, 1536
—surface antigens of, monoclonal antibodies to, 1550
—on tomato, populations in lesions, technique comparisons, 1552
—on wheat, black chaff and frost relation, 95
Xiao, X. W., 1585
Xie, W., 1552
Xiong, Z., 1128, 1518
Xu, G.-W., 1535, 1587
Xu, P. L., 1610
Xu, X., 1552
Xu, Z., 631
Xylella fastidiosa
—in citrus, seasonal detection, 1602
—on grapevine, metabolism, 1602

Yahata, P. S., 1614
Yahyaoui, A. H., 905
Yang, M., 1583
Yang, X. B., 630, 1525, 1538
Ye, X. S., 1527, 1547
Yepes, L. M., 1524
Ykema, R. E., 861
Yoder, O. C., 1588
Yoshii, K., 857
Yost, R. S., 221
Young, D. J., 1614
Young, J. R., 1561
Young, R. J., 864
Young, S., 1521
Yucel, I., 1569
Yuen, G. Y., 1545
Yuen, J. E., 1515, 1539, 1606

Zabalgogeazcoa, I. A., 1512
Zablotowicz, R., 1521
Zadoks, J. C., 54, 59, 919
Zaleska, I., 1055
Zamir, D., 508
Zapata, M., 1610
Zaske, S. K., 1586
Zavaleta-Mejia, E., 1466
Zeringue, H. J., Jr., 1582
Zettler, F. W., 857
Zeyen, R. J., 1537, 1557
Zhang, J. P., 864
Zhang, L., 1549, 1611
Zhao, J., 1527
Zheng, Y.-Z., 1568
Zidack, N. K., 1549
Ziegle, J., 1522
Zink, F. W., 630
Zitko, S. E., 940, 1575
Zitter, T. A., 1568
Zook, M., 1193
Zoysia, patch of, etiology and epidemiology, 1613
Zuber, M. S., 909, 1376
Zuber, P., 1540